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Eradication of poverty and other development issues

Industrial development cooperation

Note by the Secretary-General

The Secretary-General hereby transmits the report of the Director General of the United Nations Industrial Development Organization (UNIDO), submitted in accordance with General Assembly resolution 69/235.

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Report of the Director General of the United Nations Industrial Development Organization

I. Industrial development in review

A. Introduction

1. The previous report on industrial development cooperation (A/69/331) explored the concept of inclusive and sustainable industrial development, as enshrined in the Lima Declaration: towards inclusive and sustainable industrial development (GC.15/13), signed in 2013 by UNIDO member States, reasserting the importance of industry for sustainable development and laying the foundation for a renewed global effort to promote patterns of industrialization that mainstream the three dimensions of sustainable development, thereby contributing to poverty eradication, shared prosperity and the fight against climate change and other environmental damage.

2. The report already contained several of the elements of inclusive and sustainable industrialization that would be adopted as part of Sustainable Development Goal 9, Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. It did so by acknowledging the decisions taken by the Open Working Group on Sustainable Development Goals, as well as building on the commitments made at various high-level conferences, including the High-Level Conference of Middle-Income Countries held in Costa Rica in 2013 (followed by an international conference on fostering inclusive and sustainable industrial development in middle-income countries held in Minsk in 2015), the third International Conference on Small Island Developing States, the Istanbul Programme of Action for the Least Developed Countries for the Decade 2011-2020, as well as several regional calls for action on industrialization, including in Africa, such as the African Union Commission's Agenda 2063: The Africa We Want, as well as in Europe, Asia and Latin America.

3. Today, support for inclusive and sustainable industrial development as a driver for inclusive growth and sustainable development is even stronger than two years ago. As noted above, the 2030 Agenda for Sustainable Development explicitly recognizes inclusive and sustainable industrial development in its Goal 9. In addition, an approach to industrialization that mainstreams the three pillars of sustainable development permeates the 2030 Agenda in many other Goals, as outlined in section II of the present report. At the same time, the Addis Ababa Action Agenda of the Third International Conference on Financing for Development underlines in paragraph 15 "the critical importance of industrial development for developing countries, as a critical source of economic growth, economic diversification, and value addition". The third major global conference held in 2015, culminating with the Paris Agreement on climate change, also directly links industry with efforts to combat climate change and adapt to its negative effects.

4. There is a growing recognition that peace and security cannot be achieved without tackling the underlying causes of the crises that are responsible for countless deaths, the disruption of human settlements and environmental ecosystems and the migration of millions looking for better life opportunities. The World Humanitarian Summit in May 2016 has paved the way towards a new framework

that explores the nexus between the development and humanitarian pillars of United Nations activities. Emergency response is crucial in order to address the immediate needs of populations in crisis situations. There is also a growing recognition of the need to move beyond humanitarian action and address the economic self-reliance of refugees and migrants, as well as to support countries and people in tackling the root causes of conflict. In both of those areas, inclusive and sustainable industrial development, with its emphasis on entrepreneurship development, decent job creation and climate and environmental resilience, will have an increasingly substantial role.

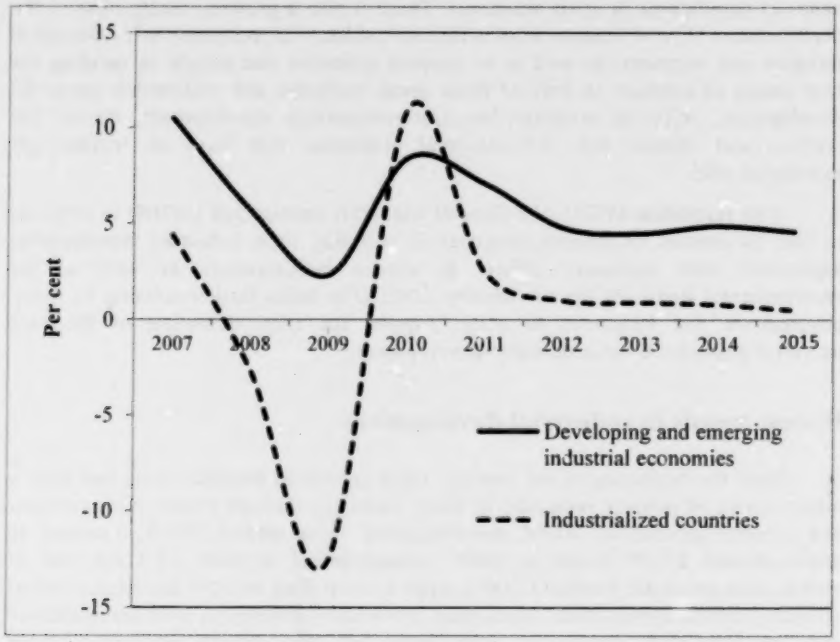
5. In its resolution 69/235, the General Assembly encouraged UNIDO to continue to link its actions to support countries in realizing their industrial development aspirations with increased efforts to ensure inclusiveness as well as the environmental sustainability of industry. UNIDO is today further refining its tools, programmes and structures to better support the implementation of the new universal framework for sustainable development.

B. Recent trends in industrial development

6. Since the beginning of the century, rapid growth in manufacturing has been a major source of poverty reduction in many countries through employment creation and income generation. World manufacturing value added (MVA) reached an unprecedented $7,390 billion at 2005 constant prices in 2010 (18.2 per cent of global gross domestic product (GDP)), after a sharp drop in 2009 during the global economic and financial crises. Since then, MVA has recovered in both industrialized and industrializing economies, with much of that growth emanating from developing countries. In 2014, global MVA reached $9,228 billion at 2005 constant prices.

7. Recently the MVA growth rate of developing and emerging industrial economies has decelerated, mainly owing to falling commodity prices and adverse conditions for external finances, dropping to 4.5 per cent in 2015 from 5.4 per cent in 2014 (see figure I). As a result, global manufacturing production has experienced yet another year of low growth, of only 2.8 per cent in 2015.

Figure I
Annual growth of manufacturing value added, by country group, 2007-2015

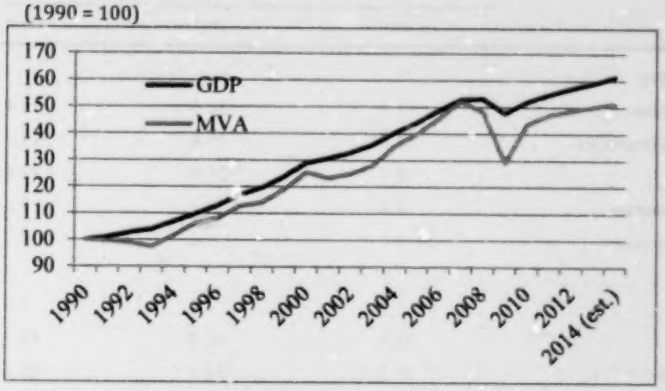


Source: UNIDO statistical database.

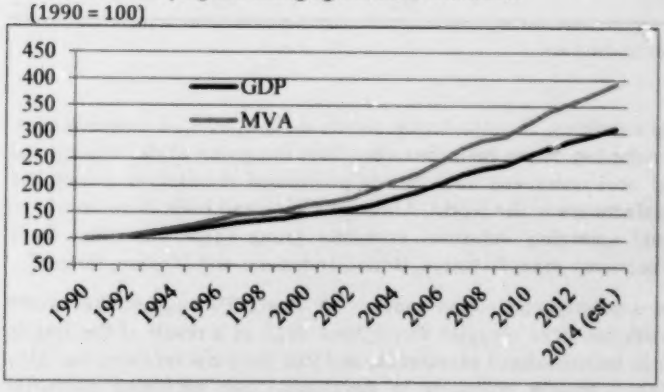
8. In developing and emerging industrial economies, MVA has grown strongly, at a remarkable 5.6 per cent annual average rate from 1990 to 2010, a rate slightly higher than the 4.8 per cent GDP growth rate. By 2014, it had almost quadrupled, representing a key driving force of overall economic growth for many of those countries. On the other hand, MVA in industrialized countries rose by only 51.3 per cent during the same period (see figure II).

Figure II
Economic and industrial growth trends by country group, 1990-2014

Change in gross domestic product and manufacturing value added in industrialized countries
(1990 = 100)



Change in gross domestic product and manufacturing value added in developing and emerging industrial economies
(1990 = 100)



Source: UNIDO statistical database.

9. In developed countries, the MVA share of GDP fell from 15.4 per cent in 1990 to 14.5 per cent in 2014, and rose from 16.2 to 20.5 per cent in developing and emerging industrial economies. Over the same period, the share of MVA in world GDP increased from 15.6 per cent to 16.2 per cent.

10. There were sharp variations in manufacturing performance among regions and developing countries (see table). Asia and the Pacific remains the largest manufacturing region by far, with an estimated share of global MVA of 48.1 per cent in 2015. Africa's MVA remains the smallest, currently accounting for around 2 per cent of global manufacturing production.

Manufacturing value added by country group and region, selected years, at constant 2010 prices

(Constant 2010 United States dollars)

	Percentage of manufacturing value added		
	2010	*2013*	*2015[a]*
By development group			
Industrialized economies	61.4	58.0	56.4
Emerging industrial economies	15.9	15.8	15.3
China	18.7	21.9	23.8
Other developing countries	3.5	3.6	3.8
Least developed countries	0.6	0.6	0.7
By region			
Africa	1.8	1.9	2.0
Asia and Pacific	44.0	46.5	48.1
Europe	27.5	26.3	25.6
Latin America	7.2	7.1	6.4
North America	19.3	18.2	18.0

Source: UNIDO statistical database.

[a] Estimate.

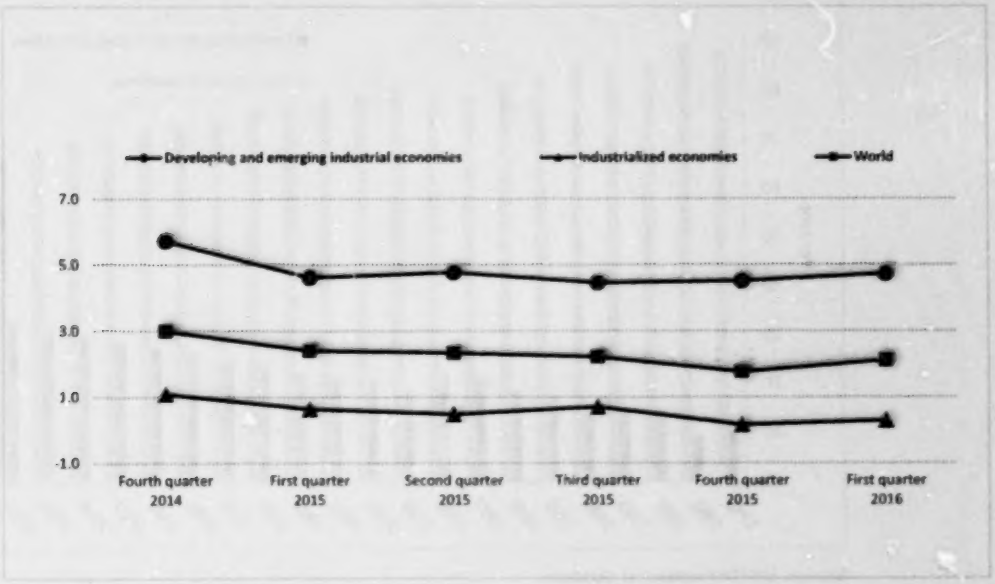
11. In developing countries, manufacturing shows a high level of concentration. China and India are the two major manufacturers from the group of developing and emerging industrial economies and have firmly positioned themselves among the top 10 leading manufacturers in the world. Although China and India have improved their developing and emerging industrial economy group share, the other three largest developing economy manufacturers, Brazil, Indonesia and Mexico, faltered.

12. However, the quarterly production indexes in figure III suggest that world manufacturing growth has been sluggish throughout 2015 as a result of the fragile economic recovery in industrialized economies, and that the slow recovery has also significantly weakened growth prospects in developing and emerging industrial economy countries.

13. The slow recovery of industrialized economies and their dependence on external markets has exposed national structural problems in developing and emerging industrial economies, which have been further exacerbated by falling oil prices, the compression of demand in national markets and fluctuations in commodity prices.

14. Despite the prolonged period of weak growth, developing and emerging industrial economies contributed around 90 per cent of global manufacturing growth in the first quarter of 2016. During that period, manufacturing output in those countries increased by 4.7 per cent, slightly higher than in the previous quarter (4.5 per cent). As depicted in figure III, the pace of growth in both country groups exhibits similar trends, but growth has been consistently higher in developing and emerging industrial economies than in industrialized countries.

Figure III
Growth rate (percentage) in world manufacturing output by quarter, by country group



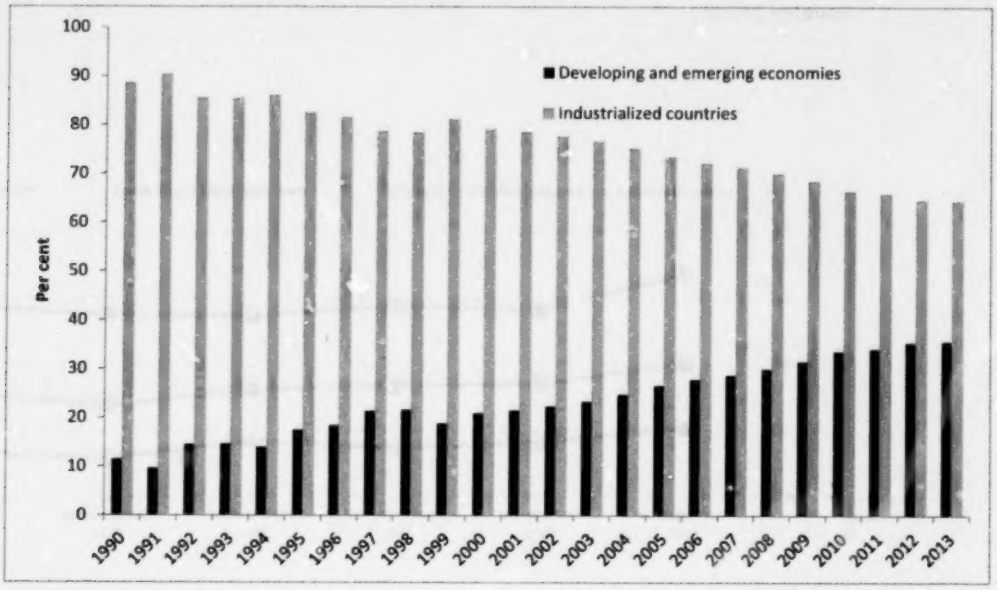
Source: UNIDO statistical database.

15. An increasingly export-oriented manufacturing sector has further translated into a greater presence of developing countries in the global trade of manufactured goods. World export growth rates averaged 7.7 per cent annually from 2005 to 2013, and in 2013 world trade reached a peak of more than $18 trillion, with 84 per cent comprising manufacturing products.

16. Manufactured goods exports from industrialized countries expanded by an annual average of 5.2 per cent during the 2005-2013 period, reaching $8,929 billion in 2013. Meanwhile, developing countries' manufactured goods exports more than doubled compared with 2005, with an 11.5 per cent annual average, to peak at $4,937 billion.

17. As shown in figure IV, the share of developing and emerging industrial economies in world manufacturing trade has increased sharply from 1990 to 2013. That upward trend is expected to continue over the next years, reflecting their high growth rates and the consolidation of their middle classes. In addition, the dependence of those countries on industrialized-country markets is expected to decline as they move towards more advanced manufacturing sectors.

Figure IV
Share in world manufactured exports by country group, 1990-2013



Source: UNIDO statistical database.

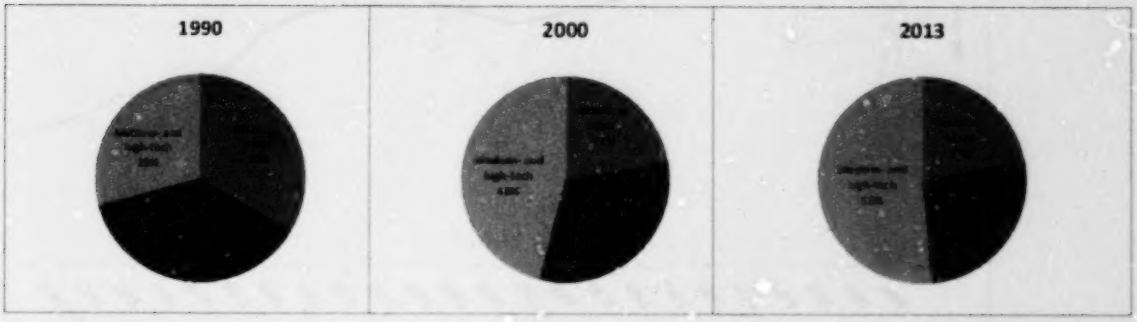
18. It is widely recognized that the benefits of exporting manufactured goods are greater than those of exporting primary commodities, largely due to the fact that higher value added can be created and higher and more sustainable economic and social returns can be captured from the former. The more complex the production structures of a country become, the greater the opportunities for division of labour, technological learning and development, industrial and economic diversification, social inclusion and institutional upgrading.

19. Advanced economies have increased their focus on more technology-intensive industries, which have enhanced the productivity of labour in manufacturing and altered the composition of the labour force away from unskilled towards semi-skilled and skilled workers, who receive higher wages. With globalization, developing economies — particularly in East Asia — have also become more integrated into global value chains and production networks, with better access to technology, information and markets. The success of developing and emerging industrial economies therefore stems from concentrating on trade in manufactured goods, driven by sound policies.

20. Around 58 per cent of the world's manufactured exports now consist of medium- and high-tech manufactured goods, such as chemical machinery and equipment, communication equipment and motor vehicles. The share of resource-based industry in global manufacturing fell from 33 per cent in 1990 to 28 per cent in 2013, while the share of medium- and high-technology products increased from 44.6 per cent to 46.7 per cent, during the same period.

21. Remarkably, developing and emerging industrial economies have seen a progressive move into the production and export of more complex manufactures, as they expanded their share in world exports of medium- and high-tech products by an average annual 6.4 per cent from 2005 to 2013 (see figure V). Some 52 per cent of manufactured exports from that country group now comprise medium- and high-tech products, up from 29 per cent and 46 per cent in 1990 and 2000, respectively.

Figure V
Technology structure of manufactured exports in developing and emerging industrial economies, 1990, 2000 and 2013

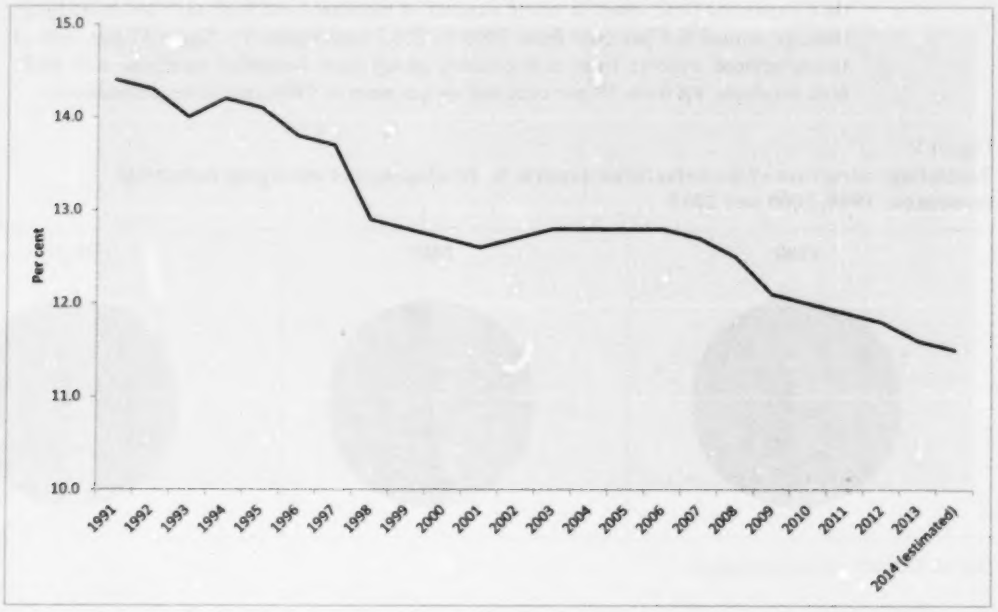


Source: UNIDO statistical database.

22. Even though both industrialized economies and developing and emerging industrial economies raised their share of medium- and high-tech production from 2000 to 2013, industrialized countries retained the most high-value-added or technologically complex activities while outsourcing labour-intensive and simple activities. In 2013, medium- and high-tech products accounted for more than half of MVA in industrialized countries, increasing from 46.3 per cent in 1990 to 50.1 per cent in 2013.

23. Manufacturing employment fell globally from 18.7 to 16.6 per cent of total employment from 1970 to 1990, and from 14.4 to 11.5 per cent between 1991 and 2014 (see figure VI).

Figure VI
Share of manufacturing employment in total employment worldwide, 1991-2014



Source: UNIDO statistical database.

24. The decline in the global share of manufacturing employment has been largely driven by its fall in industrialized countries. That tendency in industrialized countries is marked by the rapidly growing share of services, together with the increasing relocation of manufacturing to emerging markets to reduce labour costs.

25. In contrast, manufacturing employment in developing and emerging industrial economies had risen to 304 million by 2014, up from only 234 million jobs in 1991. However, the share of manufacturing employment in total employment during the same period declined slightly from 12.7 per cent to 11.2 per cent in that country group. That decline raises concerns, as jobs created by industry remain crucial to poverty reduction in many countries. That trend may also point towards premature de-industrialization in some developing countries, in which case the share of manufacturing in GDP and total employment starts to decline much earlier than seen in today's advanced industrialized economies. If that occurs, it may be a serious threat to the potential that manufacturing offers through technological learning, innovation, development and the creation of jobs and of the middle class.

26. The most important feature of manufacturing employment trends over the last 40 years has been the rise of informal employment,[1] which increased from 27.1 to 39.9 per cent from 1970 to 2010, compared with formal employment, which fell from 53.4 to 42 per cent during the same period. A lack of structural transformation

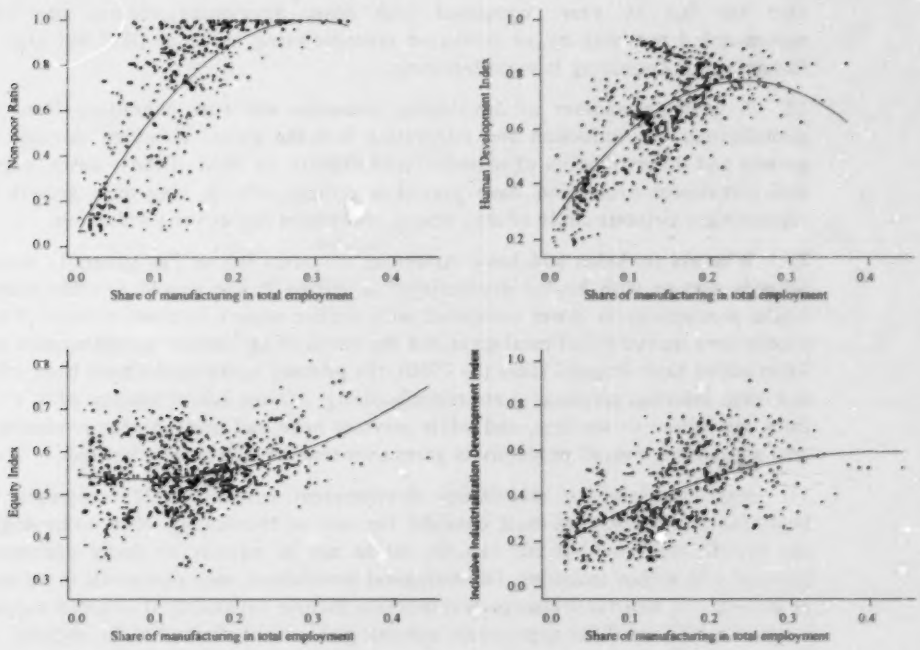
[1] Informal manufacturing jobs in that context include not only workers who are not fully protected by labour legislation but also jobs in small and medium-sized enterprises (under 10 employees) and the self-employed.

and industrialization in some developing countries may result in the exclusion of large segments of the population from the benefits of economic growth, and ultimately in growing inequality.

27. Least developed countries and other countries in Africa remain on the margins of industrialization, as exemplified since the 1970s by their very low and declining shares of MVA in GDP and population growth that is faster than GDP growth.

28. Figure VII highlights the positive correlation between manufacturing and indicators of social inclusiveness. Data from the Non-Poor Ratio, the Human Development Index, the Equity Index and the Inclusive Industrialization Development Index all demonstrate strong linkages between manufacturing and lower levels of poverty, better income distribution and better human development rankings.

Figure VII
Inclusive indices by share of manufacturing in total employment, 1970-2010


Non-poor Ratio
Human Development Index
Equity Index
Inclusive Industrialization Development Index
Share of manufacturing in total employment
Share of manufacturing in total employment
Share of manufacturing in total employment
Share of manufacturing in total employment

Source: *Industrial Development Report 2016. The Role of Technology and Innovation in Inclusive and Sustainable Industrial Development* (United Nations publication, Sales No. E.15.II.B.47).

29. The UNIDO analysis also includes an observation of the share of different industries in total manufacturing employment in order to explore the role of industries that have different technological characteristics in driving social inclusiveness. When an additional explanatory variable capturing the share of low-, middle- and high-tech industries in total manufacturing employment is included, the results suggest that the larger the share of high-tech industries, the greater the

positive impact of industrialization on social inclusiveness in terms of income equity and broader social development.

C. Conclusions on recent trends in industrial development

30. Globalization of production and trade, through the formation of global value chains and production networks, has resulted in a faster growth in trade in goods and services than that in MVA because fragmented production processes require parts, components and sub-assemblies to cross borders, sometimes more than once, before final goods are produced and shipped to final markets. Manufacturing production has also shifted from developed to developing and emerging industrial economy countries even faster, as firms move to benefit from lower production costs and growing markets.

31. As income in many developing and emerging industrial economies grows and capital deepening ensues, those countries will have to turn to innovation-driven industrial development to sustain their economic growth. Asia's economic success over the last 40 years compared with other developing regions has been accompanied not only by an increased manufacturing share in GDP but also by technological upgrading in manufacturing.

32. A growing number of developing countries are now benefiting from the globalization of production and integration into the global economy through the growth and diversification of manufactured exports. In most of those cases, export and investment promotion have played a critical role in long-term growth by supporting a virtuous circle of investment, innovation and poverty reduction.

33. Whereas in Asian and Latin American countries labour has generally moved towards sectors with higher productivity, in Africa it has moved towards sectors where productivity is lower compared with similar sectors in other regions. While people have moved out of rural areas and the shares of agriculture in employment and value added have dropped since the 1960s, the primary beneficiaries have been urban and often informal services — not manufacturing. African labour has tended to move from agriculture to services, and while services have had much higher productivity than agriculture, overall productivity gains over time have been very limited.

34. Any discussion of sustainable development within the 2030 Agenda for Sustainable Development must consider the role of technology. New technologies can benefit the poor but the benefits might not be equally or fairly distributed between and within countries. Technological innovations may also result in patterns of growth and structural change that increase income inequality if targeted support is not ensured, and if the appropriate technologies are not adapted to the context.

II. Industrial development and the 2030 Agenda for Sustainable Development

A. Inclusive and sustainable industrial development and the Sustainable Development Goals

35. Infrastructure can accelerate economic linkages and networks through the integration of modern transport infrastructure with logistics and industrial value chains. Agglomerations and other growth benefits could be realized from productive and innovation hub development around transport nodes and important urban centres. Greater connectivity, network development and market integration, combined with policies to promote industrial agglomerations and strengthen small and medium-sized enterprise clusters and networks along and between the production value chains, together with policies on fostering deeper regional economic integration though corridor approaches, will lead to greater industrial diversification and productivity. By enhancing the business infrastructure, countries can start that virtuous growth cycle.

36. Resilient infrastructure contributes to lowering the carbon and environmental footprint of industry and facilitates the optimal location of industrial agglomerations within urban and peri-urban areas, thereby minimizing associated health, safety and environmental risks in cities.

37. Many developing countries lack strategic planning in promoting the development of modern infrastructure. Appropriate regulation, which is vital for investor confidence and for the development of projects financed from international funding streams, is also lacking. Strategy design and implementation are in turn hindered by limited institutional, technical and financial capacity. Strengthening development cooperation in that area is therefore called for.

38. Industry, with its strong multiplier effect on all economic sectors (1 job in manufacturing can create 2.2 jobs elsewhere in the economy) by providing decent jobs and expanding the fiscal revenues needed for social investments, can boost capacity for socially inclusive development. Production processes that are less carbon-intensive can reduce the consumption of non-renewable resources and minimize greenhouse gas emissions while also stimulating innovation, technological change, economic diversification and job creation. The Paris Agreement has several direct implications for policy addressing industrial emissions. Inclusive and sustainable industrial development is recognized as a primary engine of technology development and transfer, skills development, productivity growth, infrastructure and green technology development and adoption and further investments in productive activities.

39. Promoting new innovative industries and technologies as well as scientific research and innovation is important. However, only a few actors, who tend to be concentrated in developed countries, often seize the new opportunities opened by innovative solutions. With the proper policy framework and international cooperation in place, the benefits of innovation and technological progress, including the new industrial revolution that is currently taking place, which is driven by the digitalization of the economy, increased automation, additive manufacturing and widespread connectivity, can be shared more widely.

40. Leveraging the benefits from the industrialization-infrastructure-innovation nexus is critical for driving economic development in the context of the globalization of production and trade. Countries must invest in the development of quality, reliable, sustainable and resilient transport and energy infrastructure (including regional and transborder), as well as in innovation infrastructure (for national and regional innovation systems to develop). A new economic policy supporting the development of transport, energy and innovation infrastructure can boost trade, promote economic diversification and competitiveness and accelerate inclusive and sustainable industrial development in developing countries.

41. Inclusive and sustainable industrial development is associated with job creation, sustainable livelihoods, innovation, technology and skills development, food security and equitable growth — some of the key requirements for eliminating poverty by 2030, as set out in Sustainable Development Goal 1. Therefore, any strategy for sustained growth must ensure industrialization processes that create opportunities that are accessible to all people while distributing income and non-income gains more equally.

42. There is an obvious link between industrial development and Sustainable Development Goal 8, "Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all". Progress on Goal 8 will be achieved through growth processes that entail structural transformation from low to higher productivity activities, typically through industrialization.

43. Closely linked to inclusive and sustainable industrial development is Sustainable Development Goal 12, "Ensure sustainable consumption and production patterns". Because global consumption and production patterns are closely interrelated, a shift towards sustainable patterns of consumption is possible only in parallel with a shift towards sustainable industrial production and consumption patterns. Closer international cooperation will be needed, as will a multi-stakeholder approach to promote the share of renewable energy in total energy consumption and to make production less carbon- and natural resource-intensive.

44. As already mentioned, efforts aimed to mitigate the effects of climate change (Sustainable Development Goal 13), and adapt to its disruptive impacts, which often hit least developed countries the hardest, cannot ignore the industrial dimension. Indeed, reducing industrial emissions while improving the resilience of productive systems to natural disasters in both developing and developed countries is central to climate action.

45. Pursuing inclusive and sustainable industrial development will have direct and indirect implications for all other Sustainable Development Goals, from realizing food security (Goal 2) through inclusive and sustainable agro-food value chains to the potential of industry to drive inclusive and sustainable economic growth in urban contexts (Goal 11) and the importance of industrialization to reduce inequality within and across countries (Goal 10). Inclusive and sustainable industrial development is further relevant to ensuring healthy lives through local pharmaceutical manufacturing development that can improve the affordability of medicines and better cater to local health (Goal 3) as well as to the implications of safe and sustainable water use by industrial facilities (Goal 6). Inclusive and sustainable industrial development also contributes to building and maintaining the preconditions for peaceful societies (Goal 16) by creating decent jobs, and has a

catalytic role of attracting investments in productive activities from public and private financial resources, thus revitalizing the Global Partnership for Sustainable Development (Goal 17). The positive effects of inclusive and sustainable industrial development throughout the broader 2030 Agenda for Sustainable Development are potentially momentous.

B. Leave no one behind: inclusive industrialization

46. Empowering the most vulnerable groups in society, namely women, youth, migrants, minorities and people living in rural environments, is essential for any development strategy aimed at eradicating poverty and combating inequalities.

47. Least developed countries remain the weakest link in global economic development and have the largest numbers of people in poverty. They suffer from weak human and institutional capacities, low levels of industrial diversification, significant informal sectors and low and unequally distributed income. Lack of industrial and economic diversification and high dependence on a few commodities, often from the extractive sector, for export and tax earnings makes them highly vulnerable to external shocks.

48. Both extreme and moderate poverty remain primarily rural, with 75 per cent of the world's poor living in rural areas. Rural poverty has persisted where policies have failed to improve agro-industrial productivity and rural infrastructure or to provide rural populations with access to social services or facilitate the development of rural business linkages.

49. Agro-industries, as a component of manufacturing, where value is added to raw agricultural materials through processing, preservation, preparation and other handling processes, contribute to post-harvest loss reduction, enhanced food safety and quality, improved export performance, job and income creation and overall economic development. The agribusiness sector holds great promise for inclusive economic growth. There is a positive correlation between human development and the agribusiness-to-agriculture ratio. Policies aimed at enhancing the productivity of agro-industries, using modern technologies and training and skills upgrading for smallholders on cleaner production and material-resource management, are crucial for inclusive and sustainable development.

50. The functional and geographical fragmentation of value chains is causing structural changes in the global economy. For developing countries, trade, investment and knowledge flows in global value chains can provide mechanisms for rapid learning and innovation. Linking to leading players in global value chains potentially also offers greater prospects to enter new markets, to gain access to new skills, knowledge and information and to upgrade their industrial capabilities. Global value chains alone are not, however, sufficient for sustainable and inclusive growth and do not ensure upgrading. Effective participation in global value chains requires substantial investments in human capital and specific skills, infrastructure (hard and soft), logistics and financial services. Public policies and collective actions involving local clusters, foreign players and government at different levels (central to local) are important in supporting effective linkages with key players in global value chains.

51. Small and medium-sized enterprises are crucial for addressing inequality and ensuring greater inclusiveness through their immense potential for employment creation and income generation. Small and medium-sized enterprises in developing countries face special barriers and need to be well equipped to compete effectively in global, regional and even national markets and to participate effectively in regional and global value chains.

52. Participation by small and medium-sized enterprises in global value chains requires targeted policies such as the creation of agribusiness incubators. The policies should act on several fronts, from simplifying access to finance to providing a range of management, technological and training services, including direct financing. Some governments might consider fostering industrial agglomerations by concentrating investment in institutions, services and infrastructure in a limited territory, such as special economic zones or industrial parks. It is important, though, that they are linked to the national economy and do not encourage any "race to the bottom" on, for example, wages and working conditions.

53. The Addis Ababa Action Agenda makes it clear that financial resources will continue to fall short of development needs unless strong commitment and innovative solutions are put in place. Private investment, development finance and export earnings remain by far the biggest potential sources of funding for long-term industrial development. In that context, increased national resource mobilization efforts, based on fostering business environment conditions that will allow the private sector to thrive and actively engage, will be central for strengthening the financial capacity of developing countries. Tailored regulatory and incentive frameworks that allow for the alignment of commercial interests with environmental and social aspirations are also necessary.

54. Official development assistance (ODA) will remain an important way of mitigating some of the risks associated with investments in developing countries. A key challenge will be to sustain ODA and maximize its development impact.

55. Challenges also remain in leveraging resources for infrastructure development. If a supporting, modern, resilient infrastructure is not in place, there will not be progress in economic development.

56. Multi-stakeholder platforms that address barriers to the uptake of clean technologies and provide predictable financing to mitigate climate change are fundamental to remedying social problems. Harnessing clean technologies, promoting technology transfer and innovation, diversifying funding and facilitating partnerships for climate resilient development are key to the implementation of the Sustainable Development Goals.

57. As rapid urban growth is mainly taking place in developing countries, industry plays an important role in supplying clean energy, environmental goods and technologies and creating new and decent jobs, thereby promoting smart and inclusive cities and ensuring both the climate resilience and the environmental sustainability of urbanization.

58. An inclusive and sustainable industrial development policy approach can contribute to disaster risk reduction efforts by strengthening economic and environmental resilience and human security, building institutions and providing sustainable energy for the poor.

59. Concerted actions are called for to deal with potential repercussions resulting from significant technological and industrial changes associated with the new industrial revolution, namely job losses and the risk of social and economic marginalization.

C. Harnessing the potential of the "new industrial revolution" for sustainable development

60. The digitalization of the economy affects the entire value chain, from conceptualization to product design, manufacturing, distribution and recycling. Integration of manufacturing with state-of-the-art information and communication technology and the combination of big data analysis, cloud computing and "the Internet of Things enables increasingly autonomous and intelligent manufacturing, where the physical components of industrial production are being transformed by smart digital networking into cyberphysical systems.

61. The new industrial revolution is expected to lead to a new wave of physical and geographical fragmentation of global value chains in which processes are managed through intelligent object networking and increased interaction between the real and virtual worlds. Many production processes are managed in real time across great distances.

62. The new industrial revolution has the potential to continuously enhance total factor productivity, increase energy and resource efficiency and further the transition to a circular economy (an industrial economy in which, when products reach the end of their useful lives, they are reused, remanufactured and recycled). Taken together, those developments might lead to the emergence of more sustainable production and consumption patterns.

63. The speed of development of new technologies and innovation inherent in the new industrial revolution can create "short-cycle technology-based" industries, where new technologies become outdated relatively quickly. Those sectors may be more advantageous for latecomers, because they have lower entry-level barriers and there is little risk of being locked into old technologies. It might offer developing countries an opportunity to leapfrog to the latest digital technologies and techniques.

64. Increased automation is, however, not expected to affect all sectors equally. While sectors such as computers and electronics, home appliances, transportation and machinery are increasingly being automated, other more traditional and very labour-intensive activities, such as the production of garments and shoes, have seen minimal automation so far. That is because automation makes more economic sense in some sectors than in others, and existing technology does not allow for automation in some sectors at present.

65. Many analysts predict that the new industrial revolution will also cause a polarization of the labour force, with an increasing share of employment in high- and low-wage jobs and a decreasing share of employment in middle-wage jobs. That includes the outsourcing and offshoring of manufacturing processes driven by factors such as cost of labour and transportation. At the same time, a reverse trend is likely to take place in manufacturing, namely reshoring or the repatriation of production from low-cost locations back to developed economies. That is usually connected to increased concerns about quality and the collocation of production and

research and development. That trend is likely to favour developed economies, given that research and development facilities are mainly located in developed rather than developing countries.

66. A concentration of low-wage jobs in developing countries is likely, because high-wage jobs will require increased digital skills, and weak education systems in developing countries often fail to provide basic skills in literacy and mathematics. The new industrial revolution is likely to go hand in hand with increased demands for science, technology, engineering and mathematics (STEM) qualifications in manufacturing. The skills bottleneck is likely to be felt most in developing countries.

67. Developing countries need to create effective training systems for a new generation of innovation and entrepreneurship educators. National systems of entrepreneurship and business education, which would facilitate start-up formation and foster collaboration between various actors, take time to establish and function effectively.

68. For the new industrial revolution to become a catalyst to reinvigorate the supply side and to create new demand, countries need to develop vibrant new industries and renovate existing ones to absorb labour. Failure to transform structurally will lead to a transfer of labour from more-productive to less-productive manufacturing industries and reduce the productivity and growth of the economy as a whole.

69. Partnerships between companies and research institutes and other developing countries on new industrial revolution technologies could play an important role in ensuring that developing countries are not trapped behind the "technology frontier". That might offer small and medium-sized enterprises, in particular, the opportunity to enter new markets, to gain access to new skills, knowledge and information and to upgrade their industrial capabilities.

III. Response of the United Nations Industrial Development Organization

A. Introduction

70. UNIDO is well positioned to fulfil its renewed mandate of fostering inclusive and sustainable industrial development and to support countries in their efforts to achieve the industry-related Sustainable Development Goals. UNIDO has aligned its strategic guidance document and services to the 2030 Agenda for Sustainable Development, and has established an integrated approach to promote economic growth and poverty eradication through industrialization.

71. UNIDO member States adopted the medium-term programme framework 2016-2019 during its sixteenth General Conference, which sets the broad programmatic objectives and priorities and guides the organization's strategic, programmatic and operational actions over the next four years. The programme framework for 2016-2019 takes into account the Lima Declaration and the recommendations relating to the management criteria of the "Strategic Guidance Document" of the UNIDO Industrial Development Board (IDB.41/24), and is determined by the 2030 Agenda for Sustainable Development and its related Goals, as well as the United Nations system-wide coherence mechanisms, including the

United Nations Resident Coordinator system and the quadrennial comprehensive policy review of operational activities of the United Nations.

72. The programmatic focus of UNIDO comprises three thematic priorities: creating shared prosperity, advancing economic competitiveness and safeguarding the environment. Each of those programmatic fields is implemented through the organization's four functions, which include technical cooperation; analytical and research functions and policy advisory services; normative functions and standards and quality-related activities; and convening and partnerships for knowledge transfer, networking and industrial cooperation. The organization also delivers cross-cutting activities in the areas of industrial statistics, research and policy guidance; standard setting; and the promotion of knowledge-sharing platforms and multi-stakeholder partnerships.

73. UNIDO continues to engage deeply with United Nations institutions and has engaged constructively in the Economic and Social Council dialogues on operational activities for development. It contributed to the Council integration and high-level segments that address the interplay of the three dimensions of sustainable development and cross-cutting issues and to the high-level political forum on sustainable development, which is the central platform for follow-up and review of the 2030 Agenda for Sustainable Development.

74. The organization provided information for a number of reports issued by the Secretary-General, most notably on the quadrennial comprehensive policy review. UNIDO participated in inter-agency discussions and ensured that the guiding principles set out in General Assembly resolution 67/226 on the quadrennial comprehensive policy review were coherently aligned with the organization's mandate. UNIDO is gradually aligning its strategic planning cycles with the policy review cycle and it is expected that its medium-term policy framework and the new quadrennial comprehensive policy review cycle will be fully aligned by 2021.

75. As a member of the Advisory Group of the United Nations Development Group, UNIDO has actively contributed to the United Nations System-wide Coherence approach for a coordinated response to States' needs through the One United Nations initiative. It has also responded effectively to evaluations and assessments carried out by the Joint Inspection Unit.

B. Programmatic focus

Creating shared prosperity

76. UNIDO continues to concentrate its efforts on the development of agro-industries, empowering women and youth in productive activities and human security in post-crisis situations. The organization's efforts to stimulate agribusiness and rural development in its beneficiary countries have focused mainly on agro-industries value chain upgrading, entrepreneurship development programmes and vocational training.

77. UNIDO, in collaboration with the Food and Agriculture Organization of the United Nations, as part of the African (Accelerated) Agribusiness and Agro-industries Development Initiative, supported African countries in value chain development, the promotion of agribusiness investment and agro-enterprise development. UNIDO works closely with other international organizations and developing finance

institutions to enhance recipient countries' competiveness in agro-industries through providing technical support to Africa's agriculture sector.

78. The integration of women into higher-skilled and better-paying productive activities remains a priority in many UNIDO interventions. The principal partner of UNIDO on gender equality and the empowerment of women is the United Nations Entity for Gender Equality and the Empowerment of Women (UN-Women). In partnership with the Sustainable Energy and Climate Resilience Initiative, UNIDO is pioneering a flagship initiative to promote gender mainstreaming in the sustainable energy sector of small island developing States in Africa, the Pacific and the Caribbean and Indian Ocean regions.

79. UNIDO has developed an integrated approach that assists governments and supports organizations to serve young people who want to improve their livelihoods through the creation of enterprises. UNIDO continues to work with key stakeholders on national strategies to strengthen the entrepreneurial ecosystem and building the capacities of key financial institutions to offer improved financial and non-financial services to small and medium-sized enterprises, in particular those run by women or youth. The UNIDO Productive and Decent Work for Youth programme assists would-be entrepreneurs by identifying sectors and value chains with a high potential for youth employment. Through its Computer Model for Feasibility Analysis and Reporting software, COMFAR, it assesses the financial feasibility of setting up businesses and teaches entrepreneurs the requisite skills.

80. The organization's post-crisis assistance is focused on activities that foster economic recovery, rehabilitate damaged agricultural or industrial infrastructure, raise skills for greater employability, create employment opportunities and stabilize communities.

Advancing economic competitiveness

81. UNIDO continues to assist States in designing appropriate industrial policies and technical cooperation programmes on industrial upgrading and modernization, small and medium-sized enterprise and entrepreneurship development, industrial agglomerations, trade capacity-building, investment and technology promotion, and on leveraging the benefits of the infrastructure-industrialization-innovation nexus through industrial corridor development approaches.

82. The dynamic nature of inclusive and sustainable industrial development requires sustained and continuous action at the policy level. UNIDO has therefore expanded its industrial policy advisory services. Policy tools such as a programme to create strategic industrial intelligence and governance mechanisms[2] support governments throughout the industrial policymaking cycle, providing advice, capacity-building and facilitation; creating and training autonomous national implementation teams and industrial intelligence units in influential government agencies; and establishing industrial observatories and overall guidance in the elaboration of industrial diagnosis. The organization's policy toolkit is further enriched by the methodologies for growth identification and facilitation for industrial upgrading and diversification. The UNIDO Institute for Capacity-Development, in addition to its educational role,

[2] See http://www.unido.org/fileadmin/user_media/Publications/Research_and_statistics/Branch_publications/Research_and_Policy/Files/Brochures/Strategic%20industrial%20intelligence%20and%20governance.pdf.

continues to serve as a global forum to support policy dialogue activities and knowledge networks.

83. The organization's approach in assisting developing countries to harness the benefits of increased globalization is to develop efficient local value and supply chains and to leverage participation in regional and global value chains for accelerating catch-up through setting up and supporting export consortiums for linking local clusters to global value chains and helping local enterprises take advantage of industrial subcontracting and outsourcing.

84. Over the last 25 years, UNIDO has established networks of subcontracting and partnership exchanges that provide an information portal for matching suppliers and buyers, and has been effective in dealing with short-term buying contracts. The networks are expanding, with funding committed for new centres in Gabon, the Islamic Republic of Iran and Oman. Further adjustments to the networks are made in terms of supplier profiling according to distribution of gender at different functional layers of a company's work force, based on which concrete actions are proposed to achieve gender balance within the enterprise.

85. The greatest challenge for many suppliers in developing countries that hope to reach export markets is to produce goods that meet international standards and respective market requirements. UNIDO therefore continues to support States in designing programmes to support local suppliers to meet the standards requirements of the markets they supply; establish quality and food safety infrastructure and address sanitary and phytosanitary technical barriers to trade; strengthen regional quality infrastructure and improve the quality and delivery of support services in standardization, conformity assessment and accreditation; meet the standards of sustainable fishing; and provide an enabling economic environment to ease compliance with international trade rules and technical regulations.

86. In addition to the updated version of the *Trade Capacity-building Resource Guide*, UNIDO produced a new issue of its *Meeting Standards, Winning Markets — Trade Standards Compliance* report that presents new approaches to the analysis of the capacity of developing countries to comply with such standards, the challenges they confront and the implications of their failure to comply.

87. The organization's Investment and Technology Promotion Offices offer a complete service for potential investors and suppliers of technology to developing countries, ranging from the latest information on investment opportunities to how to do business in unfamiliar environments. The Offices steer investors through each stage of the investment cycle and broker partnerships between enterprises in developing and industrialized countries.

88. UNIDO applies a differentiated focus for advancing economic competitiveness that is based on the diverse needs of developing countries. Least developed countries continue to be a major focus for UNIDO in terms of its policy advisory, convening and programmatic and technical cooperation functions. The sixth Ministerial Conference of the Least Developed Countries, held in November 2015 in Vienna, discussed how to mainstream inclusive and sustainable industrial development into their national development strategies and policies, and explored the means to leverage external finance to support their graduation. UNIDO plays a key role in a number of United Nations system-wide initiatives for small island developing States.

89. While least developed countries need strategies that address barriers impeding economic diversification and graduation from that status, middle-income countries require strategies for overcoming the so-called middle-income trap. UNIDO is working closely with middle-income countries to address their challenges and to encourage partnerships between middle-income countries and high-income countries through establishing knowledge-sharing platforms and tailored cooperation programmes.

90. UNIDO supports landlocked developing countries in addressing the adverse effects associated with geography and structural weaknesses, such as poor infrastructure and slow structural transformation, through designing technical cooperation programmes that leverage benefits of the industry-infrastructure-innovation nexus and partnership approaches.

Safeguarding the environment

91. UNIDO is dedicated to fostering the production and uptake of environmental goods and services and improving the environmental performance of industry. UNIDO programmes promote industrial development that is both resource-efficient and protective of the natural environment and human health. In that way, nations will be able to advance their competitiveness and access markets while at the same time reducing their environmental footprint. The programmes focus on promoting clean and renewable energies; smart cities and low-carbon transport; fostering energy and resource efficiency and cleaner production; advancing a circular economy; developing resource stewardship programmes; and implementing the various multilateral environmental agreements.

92. The UNIDO renewable energy programme promotes the establishment of mini-grids based on viable and proven technologies, such as small hydropower, biomass, solar energy and wind. The UNIDO industrial energy efficiency programme focuses on policy and standards, building capacity, raising awareness and demonstrating new technologies. It also encourages the implementation of energy management systems based on the International Organization for Standardization's energy management standard (ISO 50001) and energy system optimization. The UNIDO low-carbon low-emission clean energy technologies programme provides a comprehensive technology transfer mechanism based on several building blocks: an assessment of technological and socioeconomic needs and identification of appropriate clean energy technologies; demonstration projects; public-private partnerships for scaling up the demonstrated technologies; and new business models. That multi-pronged approach helps create small businesses and sustainable jobs, and offers potential solutions to address simultaneously the challenges of climate change, energy poverty and unsustainable industrialization in developing countries.

93. UNIDO and the United Nations Environment Programme (UNEP) host the Climate Technology Centre and Network, which was set up in Copenhagen in 2013 as the operational arm of the Technology Mechanism of the United Nations Framework Convention on Climate Change. The Network supports developing countries in adopting clean technologies for pursuing energy-efficient, low-carbon and climate-resilient development. It provides technology solutions, capacity-building and advice on policy, legal and regulatory frameworks tailored to the needs of individual countries. The Network counts on the support of a broad community of climate technology stakeholders from academia, finance, non-governmental

organizations, the public and private sector and research, as well as more than 100 national focal points selected by their countries. The network is engaged in some 1,500 activities in more than 150 countries.

94. UNIDO provides technical support for the establishment and operation of the Global Network of Regional Sustainable Energy Centres — a South-South and triangular partnership. There are currently eight centres: the Caribbean Centre for Renewable Energy and Energy Efficiency; the Centre for Renewable Energy and Energy Efficiency of the Economic Community of West African States; the East African Centre for Renewable Energy and Energy Efficiency; the Himalayan Centre for Renewable Energy and Energy Efficiency; the Mesoamerican Centre for Renewable Energy and Energy Efficiency; the Pacific Centre for Renewable Energy and Energy Efficiency; the Regional Centre for Renewable Energy and Energy Efficiency of Arab States; and the Southern African Centre for Renewable Energy and Energy Efficiency. The centres provide valuable support to projects implemented by UNIDO and other international organizations, facilitate the implementation of the Sustainable Energy for All initiative, complement national activities and promote South-South cooperation.

95. UNIDO technical cooperation supports the circular economy model by providing solutions to decouple production value chains from the depletion of natural resources and the degradation of the environment. The circular economy approach increases the resource efficiency of manufacturing processes; facilitates the development, adoption and maintenance of environmentally friendly products; extends the useful lifespan of products; and enables the sustainable management of industrial waste. Establishing eco-industrial parks and converting existing industrial zones into eco-industrial parks are emblematic of the organization's approach to promoting a circular economy.

96. UNIDO efforts to help countries comply with multilateral environmental agreements, such as the Montreal Protocol on Substances that Deplete the Ozone Layer, are strongly supportive of the circular economy.

97. The organization's activities under the Montreal Protocol have contributed to the phase-out of 71,000 tons of ozone-depleting substances per year between 1990 and 2015. UNIDO is assisting industry around the world with the phase-out of hydrochlorofluorocarbons (HCFCs). In addition to eliminating ozone-depleting substances, the projects seek technology options that minimize climate impact through the adoption of substances with low global warming potential. Women and children tend to suffer more than men from exposure to persistent organic pollutants. For that reason, many UNIDO projects designed to reduce or eliminate persistent organic pollutants draw attention to the specific dangers facing women. Gender activities are embedded in all programming and projects of the organization's Stockholm Convention on Persistent Organic Pollutants programme.

98. The year 2015 marked 20 years of successful implementation of the global Resource Efficient and Cleaner Production (RECP) programme, run by UNIDO and UNEP. The programme focuses on accelerating the application of preventive environmental strategies to processes, products and services in order to use natural resources more efficiently and reduce risks to humans and the environment.

99. The RECP programme is delivered at the national and regional levels through the Global Network for Resource Efficient and Cleaner Production (RECP*net*),

which brings together more than 70 providers of RECP services around the world. RECP*net* consists of 74 members, with 12 members in Africa, 6 in Arab States, 16 in Asia and the Pacific, 24 in Europe and Central Asia and 16 in Latin America and the Caribbean. New national RECP programmes were launched in 2015 in Bosnia and Herzegovina and Ecuador.

100. An environmental problem that cities also have to face is electronic waste, or e-waste. The e-waste stream is rapidly growing in developing countries. UNIDO programmes help devise and put in place a sustainable business model for handling e-waste, creating new jobs for skilled and unskilled workers.

101. UNIDO also developed a comprehensive approach for sound and innovative management of chemicals in industry. A core element of the approach is chemical leasing: a circular business model pioneered by UNIDO in developing and transitional economies. It aims at maximizing the utility derived from expensive and hazardous substances in industry while minimizing their cost and environmental impact.

UNIDO partnership approaches

102. During the reporting period (August 2014 to August 2016), UNIDO organized three inclusive and sustainable industrial development forums. Those followed on from the first forum, held in June 2014, which engaged States in a dialogue to formulate strategies and policies that promote inclusive and sustainable industrial development. The second forum, held in November 2014, showcased to private and public stakeholders the organization's Inclusive and Sustainable Industrial Development Programme for Country Partnerships through two pilot countries (Ethiopia and Senegal) and initiated a partnership dialogue among UNIDO, recipient governments, development finance institutions, development agencies, the private sector and donors. The third Inclusive and Sustainable Industrial Development Forum was held in Addis Ababa on 14 July 2015 as a special event to the Third International Conference on Financing for Development. The fourth forum, held in Vienna on 30 November and 1 December 2015, addressed how UNIDO can contribute to advancing industry, infrastructure and innovation in the context of Sustainable Development Goal 9.

103. The Programme for Country Partnerships approach is a new type of UNIDO assistance package for its member States: a custom-built partnership formula based on national needs and required support. The Programme mobilizes development partners, United Nations agencies, development finance institutions and the private sector — under the leadership and ownership of the national government — to advance inclusive and sustainable industrial development in alignment with the government's national development strategy.

104. Throughout the sixteenth session of the General Conference in November and December 2015, participants agreed that UNIDO had a central role to play in implementing the 2030 Agenda for Sustainable Development. At the General Conference, Peru was selected as a third country to participate in the Programme for Country Partnerships.

IV. Conclusions and recommendations

105. **Recent trends in industrial development present both opportunities and challenges for developing and emerging industrial economies. As production processes fragment under the influences of growing globalization and digitalization of production and trade, manufacturing production continues to shift to developing and emerging industrial economies in search of low-cost locations and growing markets.**

106. **At the same time, the new industrial revolution is likely to cause reshoring, or the repatriation of some manufacturing back to developed economies. There is a risk that current trends in technological progress could widen inequalities between and within countries, leaving the marginalized and vulnerable further behind. Harnessing the potential offered by the new industrial revolution for inclusive and sustainable industrial development and minimizing its negative externalities requires concerted efforts by the international community through knowledge-sharing and targeted support.**

107. **Some developing and emerging industrial economies, notably in Asia, have benefited from policies that focused on leveraging linkages with global value chains and production networks for structural transformation, industrialization and integration into the global economy. Many least developed countries have been unable to harness the investments and put in place the policies necessary to integrate effectively into the global economy, and have remained on the margins, as exemplified in the very low and declining shares of their MVA in GDP.**

108. **While manufacturing employment has increased in developing and emerging industrial economies, there is a tendency for growth in employment in the informal sectors to outpace that of formal sector employment. That carries risks both economic and social, especially in least developed countries, and underscores the urgency of pursuing policies aiming to promote inclusive and sustainable industrial development within the 2030 Agenda for Sustainable Development.**

109. **With the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals, the General Assembly adopted a universal vision of creating equitable, prosperous and environmentally sustainable societies, marking the transition to a new era in the global fight against poverty. The 2030 Agenda recognizes that inclusive and sustainable industrialization is integral to the effort to realize many of the Goals. UNIDO has a key role to play in supporting countries to pursue inclusive and sustainable industrial development and other industry-related Goals, in collaboration with other United Nations agencies, international financial institutions, donors and the private sector. In the years ahead, UNIDO will further consolidate its role as the reference organization supporting national efforts towards inclusive and sustainable industrialization — recognized as instrumental for the achievement of the Goals.**

110. **UNIDO should continue to build upon its abilities to mobilize multi-stakeholder partnership approaches that identify and foster country-specific modalities to pursue inclusive and sustainable industrialization, as a pathway for efforts to narrow many of the widening development gaps that characterize the current global development situation.**

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Sustainable development: follow-up to and implementation of the SIDS Accelerated Modalities of Action (SAMOA) Pathway and the Mauritius Strategy for the Further Implementation of the Programme of Action for the Sustainable Development of Small Island Developing States

Sustainable development of the Caribbean Sea for present and future generations

Report of the Secretary-General

Summary

The present report was prepared in response to General Assembly resolution 69/216, entitled "Towards the sustainable development of the Caribbean Sea for present and future generations", in which the Assembly requested the Secretary-General to report to it at its seventy-first session on the implementation of the resolution. The present report considers a range of activities undertaken at the national and regional level to advance the sustainable development of the Caribbean Sea as well as the possible legal and financial implications of designating the Caribbean Sea a special area within the context of sustainable development. Inputs from Member States, United Nations entities, and relevant regional organizations have been incorporated. A report of the Association of Caribbean States on progress made in the implementation of the resolution is contained in the annex.

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I. Introduction

1. In its resolution 69/216, entitled "Towards the sustainable development of the Caribbean Sea for present and future generations", the General Assembly recognized that the Caribbean Sea is an area of unique biodiversity and a highly fragile ecosystem that requires relevant regional and international development partners to work together to develop and implement regional initiatives to promote the sustainable conservation and management of coastal and marine resources.

2. The General Assembly also invited the Association of Caribbean States to submit to the Secretary-General a report on the progress made in the implementation of the resolution, for consideration by the General Assembly at its seventy-first session.

3. The present report is based on inputs from the United Nations system, relevant regional organizations and Member States.[1] The report of the Association of Caribbean States is contained in the annex to this report.

II. Possible legal and financial implications of the concept of the Caribbean Sea as a special area within the context of sustainable development

4. By calling for designation as a "special area within the context of sustainable development", Caribbean Member States are seeking to establish a new concept, but the legal and financial implications have not been elaborated to date. Caribbean Member States first made the call in 1997 at a Caribbean ministerial meeting on the Programme of Action for the Sustainable Development of Small Island Developing States, and since then, the international community has continued to consider the particular characteristics of the Caribbean Sea that might justify this type of designation.

5. As is noted in the report annexed hereto, in 2014 a consultancy was mandated by the Fifth Meeting of Heads of State or Government of the Association of Caribbean States and the General Assembly to examine the implications of Special Area status.

6. The consultancy examined the various ways in which "Special Area" is treated under legal instruments such as the International Convention for the Prevention of Pollution from Ships, the United Nations Convention on the Law of the Sea and the resolution of the International Maritime Organization on particularly sensitive sea areas. In the examination, it was concluded that the Caribbean Sea has the characteristics of a Special Area, in terms of the ecological, socioeconomic and scientific value which it presents to the people of the Caribbean. It was noted that, while the Caribbean Sea is worthy of Special Area status, the concepts of sustainable development have evolved significantly, and thus a consideration of

[1] Inputs were received from the Department of Economic and Social Affairs, the United Nations Environment Programme, the United Nations Human Settlements Programme (UN-Habitat), the United Nations Office on Drugs and Crime, the Food and Agriculture Organization of the United Nations, Australia, the Caribbean Community secretariat and the Association of Caribbean States.

Special Area status must also take into account broader issues of sustainable tourism, trade and poverty.

7. The consultancy also examined the question of "ocean governance", and it was concluded that there is no one fixed definition of it. Consequently, it was suggested that Member States should develop a working definition rather than establish an overarching legal definition. It was noted that the sustainable development of the Caribbean Sea should focus on having a coordinated management approach using existing legal instruments. More information is in the annex.

III. Activities undertaken at the national and regional levels

A. Land-based and marine-based sources of pollution

8. The Caribbean Sea region is being endangered by pollution from sources that are based both on the land and in the sea. In this regard, the secretariat of the Caribbean Environment Programme of the United Nations Environment Programme (UNEP) has actively promoted accession/ratification of the Protocol concerning Pollution from Land-based Sources and Activities to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) of 1983 and continued to place special emphasis on activities for the promotion of the implementation of the obligations under the Protocol at national and regional levels. The Protocol entered into force in August 2010 and to date 12 countries have ratified it, namely, Antigua and Barbuda, the Bahamas, Belize, the Dominican Republic, France, Grenada, Guyana, Jamaica, Panama, Saint Lucia, Trinidad and Tobago and the United States of America.

9. In support of the UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Caribbean Environment Programme has also supported the establishment of three subregional nodes or platforms for improving the management of marine litter, nutrients and sewage.

10. Developing national and regional plans to reduce pollution is also key. The Caribbean Environment Programme continues to work with countries of the wider Caribbean region to develop and/or update national programmes of action for the control, prevention and reduction of pollution from land-based sources and activities.

11. During the "Our Ocean" Conference held in Chile in 2015, the Caribbean Environment Programme secretariat, together with the Governments of Panama and Jamaica and the Environmental Protection Agency of the United States of America, announced a new Trash Free Partnership International which will focus on community-based activities in collaboration with the United States Peace Corps to reduce the impact of marine litter on coastal and marine ecosystems, human health and livelihoods. The project is being initially piloted in Jamaica and Panama but is expected to expand to the rest of the wider Caribbean region. This will assist in the implementation of the Regional Action Plan for Marine Litter Management in the Wider Caribbean Region developed in 2008 and updated in 2015.

12. Wastewater management continues to be a priority for the Caribbean region. The Caribbean Environment Programme works on this issue through the implementation of the project funded by the Global Environment Facility (GEF),

entitled "Testing a prototype Caribbean regional fund for wastewater management". That project aims to improve the capacity for wastewater management in countries of the wider Caribbean region through sustainable financing for wastewater management projects while also addressing key capacity constraints. The five-year project ends in December 2016 and has benefited 13 participating countries.

13. Finally, UNEP built collaborative efforts between the secretariat of the Protocol concerning Specially Protected Areas and Wildlife to the Cartagena Convention, the related Regional Activity Centre and the secretariat of the Convention for Cooperation in the Protection, Management and Development of the Marine and Coastal Environment of the Atlantic Coast of the West, Central and Southern Africa Region (Abidjan Convention) towards raising awareness on the massive influx of Sargassum observed since 2014. The Caribbean Environment Programme and the Regional Activity Centre have been facilitating the diffusion of information on the Sargassum influx by hosting an online platform to share experiences and knowledge on this phenomenon within the Caribbean region and West Africa. At the United Nations Environment Assembly in 2016, a special session was organized on this issue in collaboration with the UNEP Global Programme of Action.

B. Coastal and marine resources management

14. The large marine ecosystem of the Caribbean Sea is a complex and vital shared resource of the countries of the Caribbean region, and Governments and international and regional organizations implemented a number of projects and programmes to safeguard it in the last biennium. Linkages for enhanced collaboration have been established with regional fisheries organizations (Western Central Atlantic Fishery Commission, Caribbean Regional Fisheries Mechanism, Central American Fisheries and Aquaculture Organization) under the regional GEF/UNDP project entitled "Catalysing implementation of the Strategic Action Programme for the Sustainable Management of Shared Living Marine Resources in the Caribbean and North Brazil Shelf Large Marine Ecosystems". This will include development of a formal agreement between the Government of Brazil and the Cartagena Convention secretariat to facilitate participation of Brazil in wider Caribbean activities under that project.

15. The Global Coral Reef Monitoring Network — Caribbean has been reactivated to improve and streamline information, data management and reporting on the status of corals in the region. A regional workshop was held in April 2016 at the Discovery Bay Marine Laboratory, Jamaica, with the participation of 35 coral reef scientists and coastal managers from several countries to increase capacity for effective integrated coral reef monitoring and improve standardized and strategic reporting at the regional level.

16. In support of marine protected areas as a tool to conserve biodiversity, enhance fisheries and achieve other management goals, the Caribbean Environment Programme's Caribbean Marine Protected Areas Managers Network and Forum continued to support marine protected areas in the region. It brings together managers, researchers, administrators, educators and scientists as well as the private sector in an inclusive network to exchange ideas and lessons learned. Under the partnership with the "Climate resilient eastern Caribbean marine managed areas network" project, funded by the Government of Germany and led by the Nature

Conservancy, grants, technical assistance and financial resources (€155,000 per country) for marine protected areas in six eastern Caribbean countries (Antigua and Barbuda, Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia and Saint Vincent and the Grenadines) have been provided.

17. With a view to enhancing integrated sustainable use of coastal and marine resources, the project entitled "Biodiversity for sustainable development in the Caribbean through ecosystem-based management" was established in 2015 with funding from the Directorate for the Environment within the Ministry of Foreign Affairs of Italy. Its overall objective is to enhance the livelihood of the populations of the region by contributing to the conservation and sustainable management of coastal and marine biodiversity through the application of the ecosystem-based management approach.

18. The Caribbean Environment Programme continues to work closely with its associated Regional Activity Centre for specially protected areas and wildlife, hosted by the Government of France in Guadeloupe. In keeping with the provisions of the Protocol concerning Specially Protected Areas and Wildlife, work is ongoing for the cooperation programme developed among the protected areas listed under the Protocol in 2012. Thirteen additional protected areas were listed by parties at the Eighth Meeting of the Contracting Parties in December 2014.

19. There has been further implementation of the Action Plan for the Conservation of Marine Mammals in the Wider Caribbean Region through science-based sister sanctuary relationships which have been forged among five States or their territories — Bermuda, Caribbean Netherlands, Dominican Republic, French Antilles and United States — to protect the migratory North Atlantic humpback whale. A sister sanctuary agreement with Yarari, the Caribbean Netherlands sanctuary, is anticipated later in 2016. The management plan for the Marine Mammal Sanctuary of the Dominican Republic was completed in 2015 with support from the Government of Spain.

20. Human activities in coastal areas, coastal erosion, loss of natural habitat and ecosystems, marine pollution and effluents have affected coral reefs and marine habitats in the Caribbean. The Australian Direct Aid Program has assisted communities in Saint Vincent and the Grenadines to implement sustainable development programmes affected by those factors.

21. In 2015, organizations in Belize, Jamaica and Saint Vincent and the Grenadines participated in a reef guardians programme modelled on the Great Barrier Reef Guardians framework in Australia. The programme engaged users of the reefs — tour operators, farmers, mechanics and students — to educate them on the benefits of protecting the reefs through proper use and respect for the environment and the dangers involved in its neglect.

22. Adapting to climate change is also important for the Caribbean Sea region. As part of the regional programme in Latin America and the Caribbean of the International Atomic Energy Agency (IAEA), the project entitled "Establishing the Caribbean observing network for ocean acidification and its impact on harmful algal blooms, using nuclear and isotopic techniques" is being implemented as an initial step towards achieving the overall objective of adopting and implementing programmes of mitigation and adaptation to climate change in the Member States of the Caribbean Sea region.

23. As a continuation of this project, IAEA will implement from 2017 to 2019 the project entitled "Strengthening regional monitoring and response for sustainable marine and coastal environments", which focuses on raising awareness of the results of the previous project and has the ultimate goal of improving the marine environment management of the countries of Latin America and the Caribbean through actionable information provided by the network for monitoring and response.

24. Moreover, the 25 parties to the Cartagena Convention, at the Sixteenth Intergovernmental Meeting on the Action Plan for the Caribbean Environment Programme and Thirteenth Meeting of the Contracting Parties, held in December 2014, adopted the work plan and budget for 2015-2016 for the Programme. The work plan and accompanying decisions adopted by the Meeting focus on addressing integrated watershed and coastal zone management in small island developing States; prevention and reduction of pollution by oil spills, ballast water, marine litter/solid waste, sewage and nutrients; strengthening marine protected areas; ecosystem-based management for coastal and marine activities; conservation of marine mammal corridors; information-sharing on the Sargassum seaweed influx; and enhancing regional coordination for the improved governance and sustainable management of living marine resources in the wider Caribbean region.

25. The Western Central Atlantic Fishery Commission was established in 1973 by the Council of the Food and Agriculture Organization of the United Nations (FAO) and currently comprises 33 countries and the European Union as members. Almost all Caribbean and Central American countries are members of the Commission.[2] The Commission's objective is to promote the conservation, management and development of living marine resources in the Commission's area of operation, in line with the FAO Code of Conduct for Responsible Fisheries, and to address common fisheries management and development problems faced by Commission members.

26. In the period from 2014 to 2016, 31 members of the Commission participated in its activities. Eight of the 10 joint Working Groups (queen conch, spawning aggregations, fish aggregating devices, spiny lobster, recreational fisheries, flying fish, shrimp and groundfish, deep sea fisheries) have been active. Sixteen Working Group meetings and technical workshops were organized by the Commission, often in collaboration with partners, such as the Caribbean Regional Fisheries Mechanism, the Central American Fisheries and Aquaculture Organization, the Caribbean and North Brazil Shelf Large Marine Ecosystem project and the Caribbean Fishery Management Council of the United States.

27. On 27 January 2016 the secretariats of the Caribbean Regional Fisheries Mechanism, the Central American Fisheries and Aquaculture Organization and the Western Central Atlantic Fishery Commission signed a memorandum of understanding to facilitate, support and strengthen the coordination of actions among the three regional fishery bodies to increase the sustainability of fisheries.

[2] Antigua and Barbuda, Bahamas, Barbados, Belize, Brazil, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, France, Grenada, Guatemala, Guinea, Guyana, Haiti, Honduras, Jamaica, Japan, Mexico, Netherlands, Nicaragua, Panama, Republic of Korea, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Spain, Suriname, Trinidad and Tobago, United Kingdom of Great Britain and Northern Ireland, United States of America, Venezuela (Bolivarian Republic of) and European Union.

The memorandum of understanding establishes the interim coordination mechanism for sustainable fisheries in the Caribbean and North Brazil Shelf area, contributes to implementation of the Strategic Action Programme for the area and is coordinated by the secretariat of the Western Central Atlantic Fishery Commission.

28. The sixteenth session of the Western Central Atlantic Fishery Commission, hosted by the Government of France in Guadeloupe from 20 to 24 June 2016 and attended by 28 member countries, reached an important milestone for regional fisheries management in the wider Caribbean region. The Commission agreed to launch a process to establish a Regional Fisheries Management Organization in the Commission's mandate area and to collaborate in fisheries management and conservation in the areas beyond national jurisdiction of straddling stocks, deep sea fish stocks and highly migratory species that are not under the mandate of the International Commission for the Conservation of Atlantic Tunas.

29. At the sixteenth session, the Commission followed similar decisions by its neighbouring fisheries commissions, such as the Northwest Atlantic Fisheries Organization and the North-east Atlantic Fisheries Commission, and assigned the status of vulnerable marine ecosystem to various seamounts in the deep sea of the high seas part of the Commission's mandate area. The seamounts concerned are Corner Seamounts, New England Seamounts, Wyoming Seamounts and Congress and Lynch Seamounts. The Mid-Atlantic Ridge hydrothermal vents were assigned the same status, which means that they are closed for bottom fisheries until detailed survey work and assessments are carried out. This precautionary measure taken by the Commission involves an area comparable to the size of Guyana.

30. The Commission also adopted the Regional Plan for Queen Conch Management and Conservation in the Commission's area, the subregional fisheries management plan for flying fish in the eastern Caribbean and specific regionally agreed spiny lobster fisheries management measures. These plans and management measures were developed together with the partner organizations (see para. 26). The implementation of the regional plans and measures by the members of the Commission has started.

31. A number of initiatives have also been carried out by States members of the Caribbean Community (CARICOM) and CARICOM regional institutions to contribute to the efforts to ensure the sustainable management of the resources of the Caribbean Sea. Activities carried out by the Caribbean Regional Fisheries Mechanism include:

(a) Adoption in 2015 of the St. George's Declaration on Conservation, Management and Sustainable Use of the Caribbean Spiny Lobster;

(b) Adoption of a subregional fisheries management plan for flying fish in the eastern Caribbean;

(c) Adoption of a five-year plan of action to promote aquaculture in the CARICOM subregion as a means of ensuring sustainable use of commercial fisheries;

(d) Development of management performance reports for agreed regional management instruments intended to improve management of the most important commercial pelagic fisheries in the eastern Caribbean;

(e) Development of model fishery sanitary measures legislation and supporting regulations, protocols and guidelines, and assessment of fisheries environmental monitoring programmes related to sanitary standards for fish and seafood;

(f) Provision of support for training and capacity-building initiatives for government fisheries personnel in a range of areas of fisheries management such as management of fish companies and marketing, stock assessment, ocean governance (policy, law and management), data management, ecosystem modelling, and management of fishery sanitary measures.

32. Involving the academic sector is also important. For instance, the University of the West Indies has done research on the project entitled "Future of reefs in a changing environment 2010-2015"; the impacts and management of invasive species, primarily lionfish; the social and economic monitoring of fishing communities and marine protected areas; the impacts of coral bleaching on reefs; and marine spatial planning for coral reef areas.

33. Blue Week 2016: The International Conference to Promote Blue Growth and Investment, was held in St. George's, Grenada, from 14 to 22 May 2016, hosted by the Government of Grenada; it shed light on the opportunities that can be derived from the region's ocean resources.

34. Finally, regenerating fish population is important for the Caribbean Sea region. In that connection, a no-fish zone, the Oracabessa Fish Sanctuary on Jamaica's north coast, was enhanced with funding from the Australian Direct Aid Program to reduce the incidence of illegal entry into the protected area. The zone, which prohibits fishing of any kind, will over time regenerate the fish population. Excess stocks of fish will spill over outside the sanctuary's boundaries, providing increased catch and improved livelihoods for fishermen. In 2015, funding provided the foundation for increased enforcement capacity of the sanctuary with the purchase of demarcation buoys, military grade flash lights and life jackets.

C. Land, housing and human settlements

35. The Caribbean is a highly urbanized region in the world, with 70.4 per cent of its population living in urban settlements — a proportion almost twice as high as those for Africa and Asia. However, most Caribbean cities have low-density urbanization and are sprawling, so that in various places it is hard to differentiate between urban and rural population densities. Other challenges include insufficient infrastructure networks, poor mobility systems, high competition for land use, urban primacy, high concentration of the population in coastal zones and limited human resources and capacity, which are hindering sustainable growth and development in the Caribbean region. The Caribbean region is thus shaped by the reality of coastal zone urbanization, which puts additional stress on the environment by increasing the amount of impermeable surfaces and the demands on urban solid waste and wastewater management. In that context, the existence of organizations such the Caribbean Network for Urban and Land Management and the Caribbean Evaluators International, which are now holding Caribbean Urban Forums each year, is more than welcome.

36. The United Nations Human Settlements Programme (UN-Habitat) has been working together with the European Commission and the African, Caribbean and Pacific Group of States to strengthen local, central and regional capacity through a participatory slum upgrading programme. Five countries of the Caribbean are now part of this programme, namely, Antigua and Barbuda, Haiti, Jamaica, Saint Vincent and the Grenadines and Trinidad and Tobago. The programme puts slums on the urban map and encourages the necessary policy changes, budget allocations and multi-stakeholder partnerships for the sustainable improvement of living conditions for slum dwellers.

37. In the seven eastern Caribbean States, UN-Habitat has implemented, with the Organisation of Eastern Caribbean States (OECS) and the University of the West Indies, a project for enhancing regional and national institutions to develop effective land policies. The project has been highly satisfactory in achieving the following accomplishments: (a) formulation and adoption of land policy guidelines encompassing principles of equity, efficiency and sustainability; (b) national land policies and implementation tools approved in Member States based on the OECS land policy guidelines adapted to national conditions; (c) piloting in a few countries of the social tenure domain model (a pro-poor land rights recording system) in collaboration with local agencies involved in land records.

38. In Haiti, for example, all the efforts in the past few years have been put into supporting local governance in terms of planning of urban settlements (in formal and informal neighbourhoods), putting emphasis on sustainable housing and public spaces, as well as setting up new urban information systems. In the years to come, UN-Habitat will focus on advocating and contributing to the formulation and operationalization of national and local policies for sustainable urban development and housing.

39. In Cuba, UN-Habitat has been supporting the transformation of the housing sector. The programme, funded by the Swiss Agency for Development and Cooperation, has supported the Government of Cuba and the communities in preparing a national housing profile. This profile is being considered as the first step to inform and engage policymakers and decision makers, and provide them with the evidence needed to design their choices and support critical decisions for the future. The following topics have been taken into account: institutional framework; housing needs and demand; housing supply; legal and regulatory frameworks; urban land supply for housing; basic infrastructure provision for housing; building materials; construction industry and employment in the housing sector; and housing finance.

D. Social and economic development

40. The social and economic development of the Caribbean Sea region is closely related to security issues. In this regard, the United Nations Office on Drugs and Crime (UNODC) launched the UNODC Regional Programme in Support of the CARICOM Crime and Security Strategy and the memorandum of understanding was signed by UNODC and the CARICOM Implementation Agency for Crime and Security in 2014.

41. In August 2015, UNODC re-established its presence in the region through the UNODC Programme Office for the Caribbean in Bridgetown, Barbados. UNODC is currently providing assistance to the Caribbean countries in the areas of prevention

of corruption/money laundering, border control and action against illicit trafficking (drugs, counterfeit goods, undeclared money, protected flora and fauna), and drug demand reduction.

42. Addressing transnational organized crime is crucial for the economic and social development of the Caribbean Sea region. UNODC, through its Global Container Control Programme, is supporting trade facilitation and border security by introducing countermeasures to address transnational organized crime and contraband trafficking by sea through the region. The initiative is delivering sophisticated risk assessment and targeting procedures to upgrade the professional skills and inter-agency cooperation of participating authorities in the Caribbean region. The container ports of the Dominican Republic, Guyana, Jamaica and Suriname are already operational and have achieved significant results from participation in this global network, while Cuba will come online in 2016.

43. The Global Container Control Programme has a global reach and aims at fortifying the structures and processes which allow for the application of sustainable laws for States and selected ports, so as to minimize the exploitation of maritime containers for the illicit trafficking of drugs and other transnational organized crime activities. It also aims at strengthening and promoting the alliances between the customs, trade and enforcement communities to prevent the abuse of legitimate commercial trade for illicit activities while simultaneously making an effort to eradicate inter-institutional mistrust and corruption.

44. Anti-trafficking initiatives are also vital for the development of the region. The Airport Communication Programme (AIRCOP) is a multi-agency, anti-trafficking initiative, funded by the European Union, which strengthens detection, interdiction and the investigative capacities of participating airports in illicit drug source and transit countries. The overall objective is to disrupt the illegal networks that are disseminating drugs and other illicit products through smarter, more effective, well-connected, intelligence-led counter-narcotic activities.

45. In the CARICOM region, AIRCOP is being implemented in Barbados, the Dominican Republic and Jamaica. In the Dominican Republic, joint interagency task forces have been established at the international airports of Santo Domingo and Punta Cana; in Jamaica, joint interagency task forces at the international airports of Montego Bay and Kingston became operational in April 2016; while in Barbados a unit is currently being equipped at the Grantley Adams International Airport.

46. During 2015, significant support was provided by UNODC in the creation of a regional framework for the return and sharing of recovered assets (CARICOM Agreement for the Sharing or Return of Recovered Assets). The Agreement is expected to be signed by the Caribbean Member States in 2016.

47. Crucially, families are important for the economic and social development of the region. It is recognized that families are the strongest protective factors in the lives of children and young adolescents, and are used as the social structure to prevent drug use, substance abuse and other risky behaviours, particularly violence. UNODC through its global programme on drug prevention has been supporting the adaptation and piloting of evidence-based family skills training programmes in Central America and the Caribbean, South America, Central and West Asia, South-East Europe and East Africa. The family skills training programme is being piloted in Central America and the Caribbean in coordination with the UNODC Regional

Office in Panama. The programme of concern is an adaptation of the Strengthening Families Program, a strong evidence-based programme designed in the United States for families with children aged 10 to 14 years.

48. Under the global programme on drug prevention, UNODC has been disseminating the International Standards on Drug Use Prevention, which it developed with the assistance of a globally representative group of more than 60 researchers, policymakers and practitioners and which were presented to the Commission on Narcotic Drugs in March 2013. Building on the Standards, UNODC has also launched the Prevention Strategy and Policymakers initiative, undertaken jointly with Italy, which aims to disseminate the Standards and support policymakers in planning a national drug prevention system that is health centred and based on scientific evidence.

E. Human capacity development

49. In addition to the training activities outlined above, agencies and organizations have held a number of national and regional workshops and training courses to build human capacity.

50. The development by the UNEP Caribbean Environment Programme of new technical reports, infographics and fact sheets, the enhanced use of social media and targeted training for media professionals has facilitated greater knowledge-sharing and awareness-raising among the general public and other interested persons on coastal and marine issues, including on emerging issues such as ocean acidification, impacts of Sargassum and the negative environmental and human health impacts of microplastics.

51. The Caribbean Environment Programme continues to serve as an information hub for its member States and territories and has continued to update its website information on environmental news, the laboratory capacity database for the region, a children's corner, a member country information page, a media room, meeting pages and an online calendar. The Programme continues to promote, organize and participate in several commemorative activities to mark significant environmental days, in particular World Environment Day, the International Day for Biological Diversity, World Water Day and World Oceans Day.

52. Since the last report (A/69/314), the Caribbean Environment Programme has increased its reach across the regions and internationally by over 500 per cent through the social media sites Facebook and Twitter. Newly developed outreach products include new infographics, technical publications, regular press releases and news articles, as well as participation in regional and international events and activities to promote environmental protection and the sustainable development of the marine environment and to promote the ratification of the Cartagena Convention and its Protocols.

53. Through the GEF Caribbean Regional Fund for Wastewater Management project, which ends in December 2016, the Caribbean Environment Programme has provided training to over 600 persons in wastewater management including on selection of wastewater treatment technologies, facilitation, water and wastewater management, governance and sanitation. This was done in collaboration with several agencies including the Caribbean Development Bank, the Caribbean Water

and Sewerage Association, the World Bank, the Inter-American Development Bank, the Global Water Partnership Caribbean and the United Nations Institute for Training and Research.

54. The Caribbean Environment Programme has, through the Protocol concerning Specially Protected Areas and Wildlife to the Cartagena Convention, continued to support national efforts to strengthen management of marine protected areas through regional and local training and exchanges among such areas in order to disseminate better practices through information-sharing, by means of its Caribbean Marine Protected Areas Management Network and Forum and its regional database on marine protected areas, the most comprehensive of its kind with over 300 Caribbean marine protected areas listed. In 2015 a regional two-week training programme on marine protected areas was held in Grenada in collaboration with the BIOPAMA (Biodiversity and Protected Areas Management) Programme of the International Union for Conservation of Nature.

55. In 2015, fishery and reef professionals from Grenada, Guyana, Jamaica and Saint Vincent and the Grenadines were recipients of fellowships awarded by the Department of Foreign Affairs and Trade of Australia.

56. The anti-corruption adviser programme is carried out as a technical assistance activity offered by UNODC to Member States to assist in developing their strategies and building their capacity to successfully implement the United Nations Convention against Corruption.

57. As the region moves forward in safeguarding the Caribbean Sea as a special area for sustainable development, a number of crucial areas for technical cooperation and assistance have been prioritized. These include:

(a) The establishment of tools and the enhancement of capacities to enable small island developing States members of CARICOM to evaluate the technical, financial, social, economic and environmental aspects/requirements related to accession, ratification and implementation of the various multilateral environmental agreements and related instruments of significance to the Caribbean Sea;

(b) Capacity-building support for strengthening the scientific approaches to management of regional fisheries resources, including Caribbean queen conch;

(c) Establishment of a programme of assistance for conducting a valuation of the fisheries and aquaculture sectors;

(d) Development of data and statistics for the fisheries sector;

(e) Assistance to facilitate training and capacity-building on oceans governance, including the development of the region's ocean-forecasting capability.

58. The Department of Economic and Social Affairs continues to implement the Development Account project. The project focuses on strengthening the capacity of small island developing States to assess progress in the implementation of the Mauritius Strategy to mitigate risks and reduce vulnerability. Subregional workshops were held in Bridgetown for the three Caribbean piloting countries (Barbados, Jamaica and Saint Lucia) from 7 to 9 October 2015. The project is ongoing with a focus on developing a vulnerability-resilience country profile for each pilot country.

IV. Activities of the Caribbean Sea Commission

59. Activities of the Caribbean Sea Commission are fully described in the annex. Among the key activities were the 14th meeting of the Caribbean Sea Commission, held on 24 November 2014 and the 15th meeting of the Commission held on 1 October 2015.

60. The First Symposium of the Caribbean Sea Commission, on the theme "Challenges, dialogue, and cooperation towards the sustainability of the Caribbean Sea", was held in Port of Spain, Trinidad and Tobago, on 23 and 24 November 2015. The Symposium welcomed a wide range of experts from 18 States members of the Association of Caribbean States and 23 regional organizations and institutions, totalling 113 participants on the first day and 98 participants on the second day.

61. On 6 May 2016, the 1st meeting of the Scientific and Technical Sub-Commission of the Caribbean Sea Commission was held at the secretariat of the Association of Caribbean States. On 13 May 2016, the 1st meeting of the Legal Sub-Commission of the Caribbean Sea Commission was held, also at the Association secretariat.

62. The Caribbean Sea Commission developed a databank to improve the management of specific emerging critical issues relating to the sustainability of the Caribbean Sea, through the sharing of management experiences, and project research data. Further, the databank aspires to improve the communication of information relevant to Caribbean Sea policy among Member States.

V. Conclusion

63. Member States in the wider Caribbean region have continued in this biennium to work collaboratively on behalf of their shared resource, the Caribbean Sea. They have been supported in their efforts by the international community, including partner Governments, intergovernmental organizations and the private sector. Their efforts address economic, social and environmental aspects of sustainable development and often include capacity-building components. In addition, the ecosystem-based approach has been adopted in many cases.

64. The Association of Caribbean States, through the Caribbean Sea Commission, remains committed to the goal of attaining Special Area status for the Caribbean Sea. Through its recent revitalization, the Commission is actively pursuing the sustainable development of the Caribbean Sea by means of activities such as joint research, management projects, meetings and information-sharing mechanisms, with the aim of improving coordination and cooperation in marine environmental management issues and the requisite decision-making.

Annex

Progress made in the implementation of resolution 69/216

Report of the Caribbean Sea Commission of the Association of Caribbean States

Introduction

1. The Caribbean Sea is a fragile and complex marine area that is shared by several countries of varying sizes and stages of economic development and upon which the populations of those countries depend for their social, economic, cultural, climatic, aesthetic and other benefits. Therefore in order to facilitate the sustainable management and development of the Caribbean Sea it is prudent to utilize a network structure throughout the wider Caribbean region that is able to coordinate the myriad projects and policies that relate to the Caribbean Sea.

2. In this regard, the Caribbean Sea Commission has been identified as the mechanism that can be utilized to accomplish this goal through the establishment and maintenance of a technical and policy-oriented network comprising all the countries of the Association of Caribbean States and organizations that conduct activity that relates in any way to the Caribbean Sea. The rationale of this initiative is to facilitate the coordination and exchange of experiences among member States with regard to their policies and activities, in order to strengthen existing mechanisms by promoting synergies and inter-institutional cooperation while respecting the mandate of each State or organization.

3. This report outlines the activities of the Association of Caribbean States and its Caribbean Sea Commission as they relate to General Assembly resolution 69/216, entitled "Towards the sustainable development of the Caribbean Sea for present and future generations".

The Caribbean Sea Commission and its Sub-Commissions

4. Building on the substantive groundwork of Barbados as the Chair of the Caribbean Sea Commission, the Commission has undergone a period of revitalization during the years 2014 to 2016. This revitalization has begun the process of establishing the Commission as the primary mechanism for coordination and cooperation in activities that promote the sustainable development of the Caribbean Sea. The main activities and actions completed in the period in pursuit of this goal are outlined in the present report; they are:

- The Board meetings of the Caribbean Sea Commission and the meetings of the States members of the Commission.
- International support for the Commission.
- The results of the consultancy on the legal, economic and financial implications of attaining "Special Area" status.
- The First Symposium of the Commission.
- The convening of the Sub-Commissions of the Commission: the Legal Sub-Commission and the Scientific and Technical Sub-Commission.

- The Commission's databank.
- The future activities of the Commission.

Meeting of the Board of the Caribbean Sea Commission and meetings of the States members of the Commission

5. The 14th meeting of the Caribbean Sea Commission was held on 24 November 2014, chaired by Costa Rica. The meeting discussed the transition of responsibilities to the new Chair of the Board, Costa Rica, the concept of the Commission Symposium, and the consultancy on the legal implications of Special Area status.

6. In March 2015 the Chairmanship of Costa Rica came to an end and the Dominican Republic was elected as the new Chair, with Barbados and Nicaragua providing support as the Vice-Chairs of the Commission.

7. In September 2015, at the 3rd meeting of the Board of the Caribbean Sea Commission, it was decided that the Commission would contract a programme coordinator, to coordinate the activities at the secretariat for the advancement of the goals of the Commission. Following advertisement and internal selection, a coordinator was recruited for a period of two years, starting on 15 November 2015.

8. The 15th meeting of the Caribbean Sea Commission was held on 1 October 2015. That meeting discussed and finalized the topics of discussion and the format of the First Symposium of the Commission, which was held in November 2015.

9. At the XXI Ordinary Meeting of the Ministerial Council, in January 2016, there was agreement to reinvigorate the Sub-Commissions in order to strengthen the institutionalization process, and member States were asked to nominate individuals to be members of the Sub-Commissions.

International support for the Caribbean Sea Commission

10. Turkey, an Association of Caribbean States observer State, continues to provide generous support to the work of the Commission. Between September 2014 and June 2016 the Commission has received $220,000.00 in financial support from Turkey. A total amount of $100,000.00 was received in 2015 and another $120,000.00 was received in June 2016.

Consultancy of the Caribbean Sea Commission

11. The consultancy was a response to mandates given by the Fifth Meeting of Heads of State or Government of the Association of Caribbean States and the United Nations General Assembly to examine the implications of Special Area status. In June 2014 the consultant, Judy Daniel, was contracted to complete a report entitled "Legal, financial, and economic implications of attaining "Special Area" status for the Caribbean Sea". The consultancy was completed in October 2014 and circulated to member States and observers in November 2014 for their consideration and comments. Judy Daniel presented her consultancy report at the 15th meeting of the Commission.

12 The consultancy examined the various ways in which "Special Area" is treated under legal instruments such as the International Convention for the Prevention of Pollution from Ships, the United Nations Convention on the Law of the Sea and the resolution of the International Maritime Organization on particularly sensitive sea

areas. In the examination, it was concluded that the Caribbean Sea has the characteristics of a Special Area, in terms of the ecological, socioeconomic and scientific value which it presents to the people of the Caribbean. It was noted that while the Caribbean Sea is worthy of Special Area status, the concepts of sustainable development have evolved significantly, and thus a consideration of Special Area status must also take into account broader issues of sustainable tourism, trade and poverty.

13. The consultancy also examined the question of "ocean governance", and it was concluded that there is no one fixed definition of it. Consequently, it was suggested that member States should develop a working definition rather than establish an overarching legal definition. It was noted that the sustainable development of the Caribbean Sea should focus on having a coordinated management approach using existing legal instruments.

14. The consultancy report was also presented by Judy Daniel to the Legal Sub-Commission of the Commission at its 1st meeting, which was held in May 2016. The conclusions of the Sub-Commission, and next steps related to the concept of Special Area, are detailed below (paras. 22-23).

Caribbean Sea Commission Symposium

15. The First Symposium of the Caribbean Sea Commission, on the theme "Challenges, dialogue, and cooperation towards the sustainability of the Caribbean Sea", was held in Port of Spain, Trinidad and Tobago, on 23 and 24 November 2015. The Symposium welcomed a wide range of experts from 18 States members of the Association of Caribbean States and 23 regional organizations and institutions, totalling 113 participants on the first day and 98 participants on the second day. The opening ceremony featured remarks from Frances Seignoret, Permanent Secretary of the Ministry of Foreign and CARICOM Affairs of Trinidad and Tobago; the Chair of the Ministerial Council, Lener Renauld, Minister for Foreign Affairs and Worship of Haiti; the Chair of the Caribbean Sea Commission, Andrés Navarro, Minister for Foreign Affairs of the Dominican Republic; Alfonso Múnera, Secretary General of the Association of Caribbean States; and Dale Webber, Pro Vice-Chancellor for Graduate Studies of the University of the West Indies.

16. The Symposium had sessions which focused on the topics "Facing the threat of the Sargassum seaweed", "Erosion of coastal zones and mitigation alternatives" and "Invasive species, the lionfish: current situation" with presentations by experts from Barbados, Colombia, Costa Rica, Cuba, Jamaica and Mexico.

17. The event was fruitful and resulted in the Communiqué of the First Symposium of the Caribbean Sea Commission, which highlighted the following results:

- The participants presented in a detailed and systematic manner on the uncontrolled increase of the invasive species the lionfish and Sargassum seaweed and the erosion of the coasts of the Caribbean Sea and the serious and negative impacts of these on the people, the territory and the economy of the greater Caribbean. Furthermore, they highlighted the intimate relationship between these phenomena and the deterioration of the coral reefs.
- The experts recommended to the Governments of the States members and associate members of the Association of Caribbean States to strengthen the

mechanisms of coordination and centralization of actions, in order to address the serious problems that have adversely affected the sustainability of the Caribbean Sea.

- Additionally, it was suggested that the Caribbean Sea Commission of the Association of Caribbean States be assigned the mission of acting as a coordinating mechanism, to facilitate the cooperation among the nations of the greater Caribbean. In this regard, the secretariat of the Association considered the coordination among the subregional organizations of integration to be of vital importance and welcomed with enthusiasm the proposal of the representative of the Organisation of Eastern Caribbean States to work with the Association.

- The participants considered it essential to seek international financing to drive a wider investigation on the topics of the Symposium and that actions be taken on behalf of the Governments in order to establish mechanisms to centralize and disseminate scientific information which will be gathered. In this regard, the secretariat of the Association of Caribbean States conveyed its intention to develop a databank to help with this function.

- The participants underscored the importance of using the Commission as a mechanism for transmitting knowledge provided by the scientific community with respect to the sustainability of the Caribbean Sea to the political decision makers of the States members and associate members of the Association of Caribbean States.

- The representative of France proposed to develop a project in relation to the sustainability of the Caribbean Sea as well as convene a conference on the Caribbean Sea in Guadeloupe in 2016; the project will be presented to the Association secretariat in the coming months. The secretariat expressed its gratitude for the proposal of collaboration with the Government of France.

- The secretariat of the Association of Caribbean States and its Caribbean Sea Commission will report to the next Ministerial Council of the Association the recommendations outlined in this document, with the hope to eventually include those that are considered priority and achievable in the Association's 2016-2017 plan of action, to be presented at the seventh summit of the Heads of State in Havana in 2016.

First meeting of the Scientific and Technical Sub-Commission of the Caribbean Sea Commission

18. On 6 May 2016, the 1st meeting of the Scientific and Technical Sub-Commission of the Caribbean Sea Commission was held at the secretariat of the Association of Caribbean States. The meeting was attended by five Sub-Commission members: Barbados, Costa Rica, Cuba, Guatemala and Mexico, who were nominated by their respective member States. The Dominican Republic, the Chair of the Caribbean Sea Commission, also attended the meeting and was represented by Ambassador José Serulle Ramia.

19. The meeting addressed the implementation of the databank of the Caribbean Sea Commission in detail, and defined its dual objective as (i) an information source for the environmental management practitioners of member States and (ii) an information-gathering mechanism for the Association of Caribbean States and its decision-making

bodies. The features of the databank and the method of data collection were also discussed, and these are discussed in more detail below (paras. 24-28).

20. The meeting also discussed the two collaborative projects presented by Cuba on the topics of coastal erosion and coral reefs. These projects represent the implementation of the recommendations of the Board of the Commission and the consultancy, namely to pursue the sustainable development of the Caribbean Sea through joint projects among States members of the Association of Caribbean States.

21. Finally, the meeting clearly articulated the role of the Scientific and Technical Sub-Commission as a technical advisory body to the high-level decision-making bodies of the States members of the Association of Caribbean States. The members of the Sub-Commission clarified that the Sub-Commission can be used to communicate available technical knowledge, especially that collected through the databank, into recommendations for the use of policymakers.

First meeting of the Legal Sub-Commission of the Caribbean Sea Commission

22. On 13 May 2016, the 1st meeting of the Legal Sub-Commission of the Caribbean Sea Commission was held at the secretariat of the Association of Caribbean States. The meeting was attended by four Sub-Commission members: Colombia, Costa Rica, Jamaica and Nicaragua, who were nominated by their respective member States. The Dominican Republic, the Chair of the Caribbean Sea Commission, also attended the meeting and was represented by Ambassador José Serulle Ramia.

23. The meeting discussions were centred on articulating the way forward for the attainment of Special Area status, and the reporting of progress to the United Nations. Following a presentation by consultant Judy Daniel, the members deliberated on the concept and definition of "Special Area". The Sub-Commission agreed that the Commission should move forward with a working concept of Special Area, instead of having a fixed definition.

Databank of the Caribbean Sea Commission

24. The databank of the Caribbean Sea Commission aims to improve the management of specific emerging critical issues related to the sustainability of the Caribbean Sea, through the sharing of management experiences, and project research data. Further, the databank aspires to improve the communication of information relevant to Caribbean Sea policy among member States.

25. Specifically, the databank will have three key features:

- An online database of national and regional projects related to the sustainable development of the Caribbean Sea.
- A database of best practice guides and case studies of management responses.
- A database of regional experts to address emerging topics/specific critical issues.

26. The databank of the Caribbean Sea Commission will be a user-driven centralized space for the sharing of critical information for the management of Caribbean Sea sustainability issues. The system aspires to enable the provision of policy-relevant science and information to the individuals who make national

environmental policy. Furthermore, by identifying effective management options, the system enables their replication by nation States and the generation of synergistic regional policy.

27. In the first instance, the databank will focus on gathering information related to the prediction, monitoring and management of the Sargassum seaweed inundation faced by the Caribbean. Information on projects, experts and national response efforts will be centralized in the databank, and be used for the development of a regional best practice guide targeted at high-level policymakers. The regional best practice guide will focus on identifying the most effective management efforts as well as opportunities for shared regional policy.

28. The Commission hopes to launch the databank by the end of 2016.

Future activities of the Caribbean Sea Commission

Proposed project on coastal erosion and coral reefs

29. At the 1st meeting of the Scientific and Technical Sub-Commission of the Commission, José Luis Juanes Marti, representing the Government of Cuba, presented two projects to be adopted by the Association of Caribbean States: one on the preservation of coral reefs, and the other on the management and monitoring of coastal erosion. The Association secretariat is currently seeking funding for these two projects, with the hope of beginning implementation in the second half of 2016.

Second Symposium of the Caribbean Sea Commission

30. At the 8th Extraordinary Meeting of the Ministerial Council of the Association of Caribbean States, held in Havana on 3 June 2016, Andrés Navarro, Minister for Foreign Affairs of the Dominican Republic, offered to host the Second Symposium of the Caribbean Sea Commission. The details for the Symposium have to be finalized, and the secretariat anticipates that, like the First Symposium of the Caribbean Sea Commission, the Symposium will be a success.

Conclusion

31. The Association of Caribbean States, through the Caribbean Sea Commission, remains committed to the goal of attaining Special Area status for the Caribbean Sea. Through its recent revitalization, the Commission is actively pursuing the sustainable development of the Caribbean Sea by means of activities such as joint research, management projects, meetings and information-sharing mechanisms, with the aim of improving the coordination and cooperation of marine environmental management issues and its requisite decision-making. The Association of Caribbean States is grateful for the consideration of the United Nations General Assembly and the United Nations Secretary-General in this matter.

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Harmony with Nature

Note by the Secretary-General**

Summary

The General Assembly, in its resolution 70/208, decided to initiate, in 2016, a virtual dialogue on Harmony with Nature among, inter alia, experts on Earth jurisprudence worldwide, including those who had been active in the interactive dialogues of the General Assembly, to inspire citizens and societies to reconsider how they interact with the natural world in order to implement the Sustainable Development Goals in harmony with nature. The Assembly noted that some countries recognize the rights of nature in the context of the promotion of sustainable development and requested that the experts submit a summary to the Assembly at its seventy-first session and that the virtual dialogue be hosted on the Harmony with Nature website.

The experts' summary report of the first virtual dialogue of the General Assembly on Harmony with Nature among experts on Earth jurisprudence worldwide, containing their deliberations and recommendations, as well as an annex listing the names of the experts participating in the dialogue, is attached herewith.

* A/71/150.

** The views expressed in the summary report are those of the contributing experts and do not imply any expression of opinion on the part of the United Nations.

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I. Introduction

1. On 22 December 2015, the General Assembly adopted resolution 70/208, its seventh resolution on "Harmony with Nature", in which it requested the Secretary-General to initiate, in 2016, a virtual dialogue on Harmony with Nature among, inter alia, experts on Earth jurisprudence worldwide, including those who have been active in the interactive dialogues of the General Assembly, in order to inspire citizens and societies to reconsider how they interact with the natural world in order to implement the Sustainable Development Goals in harmony with nature, noting that some countries recognize the rights of nature in the context of the promotion of sustainable development, and requested that the experts submit a summary to the General Assembly at its seventy-first session and that the virtual dialogue be hosted on the website on Harmony with Nature.

2. A first step in recognizing the rights of nature took place in June 2012 at the United Nations Conference on Sustainable Development, held in Rio de Janeiro, Brazil, where Heads of State and Government adopted the outcome document, entitled "The future we want", recognizing that the Earth and its ecosystems are our home and that some countries recognize the rights of nature in the context of the promotion of sustainable development. They also agreed that, in order to achieve a just balance among the needs of present and future generations, it is necessary to promote harmony with nature.[1]

3. Subsequently, in its resolution 70/1, adopted on 25 September 2015, the General Assembly adopted the post-2015 development agenda, the 2030 Agenda for Sustainable Development, which contains 17 Sustainable Development Goals, including Goal 12, target 12.8, which seeks to "ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature". In the context of the 2030 Agenda, the 2016 virtual interactive dialogue advances the implementation of target 12.8 by providing information and recommendations from experts in Earth-centred governance, also known as Earth jurisprudence.

4. The first virtual dialogue on Harmony with Nature was initiated on 22 April 2016, in commemoration of International Mother Earth Day, and concluded on 22 June 2016. The dialogue built upon the conclusions of the five interactive dialogues on Harmony with Nature held from 2010 to 2015.

5. The experts on Earth jurisprudence who participated in five interactive dialogues on Harmony with Nature, held from 2011 to 2015, and those joining for the first time recognized the intrinsic value of nature and the need to shift our perceptions, attitudes and behaviours from anthropocentric or human-centred, to non-anthropocentric or Earth-centred. Their work both theorizes and advances strategies grounded in restoring an Earth-centred worldview.

6. In the Earth-centred worldview, the planet is not considered to be an inanimate object to be exploited, but as our common home, alive and subject to a plethora of dangers to its health: this process requires a serious reconsideration of our interaction with nature as well as support for Earth jurisprudence in laws, ethics, institutions, policies, and practices, including a fundamental respect and reverence for the Earth and its natural cycles.

[1] Resolution 66/288, para. 39.

7. The focus of the virtual dialogue therefore was on how to reshape human governance systems to operate from an Earth-centred rather than human-centred perspective, so that we may all be guided to live as responsible members of the Earth community.

8. Over 120 international experts from different continents, totalling 33 nationalities, joined the virtual dialogue (see annex). The experts addressed Earth jurisprudence from the following eight disciplines, all of which have been addressed in the six previous reports of the Secretary-General on Harmony with Nature:[2] Earth-centred law; ecological economics; education; holistic science; the humanities; philosophy and ethics; the arts, media, design and architecture; and theology and spirituality.

9. A number of experts who participated in past dialogues acted as facilitators, interacting online, across continents, with experts in the different disciplines. On the basis of written submissions and online interactions, the facilitators prepared summaries of the above-mentioned disciplines, which constitute the basis of the present report.

10. The following questions were the same for all disciplines:

(a) What would the practice of the selected discipline look like from an Earth jurisprudence perspective? How is that different from how the selected discipline is generally practiced now? And, what are the benefits of practicing the selected discipline from an Earth jurisprudence perspective?

(b) What promising approaches do you recommend for achieving implementation of an Earth-centred worldview for the discipline selected?

(c) What key problems or obstacles do you see as impeding the implementation of an Earth-centred worldview in the discipline selected?

(d) What are the top recommendations for priority, near-term action to move your selected discipline toward an Earth jurisprudence approach? What are the specific, longer-term priorities for action?

11. Given the overwhelming interest and wide participation of experts in Earth jurisprudence in the first virtual dialogue, and the extensive information provided in their written submissions, it is strongly recommended that the summary report be read in conjunction with inputs of the individual experts, all of which are available at the Harmony with Nature website (www.harmonywithnatureun.org/wordpress/2016-dialogue/).

II. Earth jurisprudence: a holistic system of governance

12. Experts from around the world working in the natural and social sciences and members of the Harmony with Nature Knowledge Network participating in the virtual dialogue recognize the need for a holistic worldview rooted in respect for Nature[3] and the interdependence of humankind and the Earth. They believe that humanity, which is inextricably part of the community of life on Earth, cannot continue to override the laws that maintain the homeostatic balances of the Earth system.

[2] A/65/314, A/66/302, A/67/317, A/68/325, A/69/322 and A/70/268.

[3] Henceforth in the report, the word Nature is capitalized in the experts' summary in recognition of Nature's inherent rights in an Earth-centred worldview.

13. They stress that economic growth for some has been achieved at the expense of the natural world, as well as of many human populations. Paired with unsustainable consumption and production patterns, the current economic system has relentlessly altered the dynamics and functioning of the entire Earth system to a degree never before seen in human history.

14. At the core of the current anthropocentric worldview, the Earth is viewed as a source of raw materials to be commercialized, exploited, modified, altered and privatized. This has significantly affected the health of the Earth, our life-giving source, and, by default, the well-being of humankind. Rising rates of poverty, famine and inequality reflect complex social realities that are intricately interwoven into the present ecological crisis, which, in itself, reflects a poverty of spirit.

15. In order to forge a balanced and healthy relationship between human activity and the Earth, there is an urgent need for society to replace the current anthropocentric worldview with a holistic system of governance, in which humanity plays a different role in how it perceives and interacts with the natural world. In this new role, humanity would accept the reality that its well-being is derived from the well-being of the Earth and that living in harmony with nature is a necessary means to sustaining human well-being and human rights.

A. Philosophical and ethical principles of Earth jurisprudence

16. Experts in philosophy and ethics emphasize the need for a new paradigm that allows humanity to repair its current destructive relationship with the Earth.

17. Earth jurisprudence recognizes the Earth as the source of natural laws that govern life. It provides a cohesive framework that underpins many disciplines, weaving them together to create a more effective, holistic governance approach, reflecting the integrated nature of the world in which we live. Worldwide, indigenous peoples' philosophies, spiritualities and traditional forms of knowledge express the understanding that human governance systems must be derived from the laws of the Earth and be in compliance with them.

18. Earth jurisprudence is interdisciplinary, identifying basic values that should govern economics, the physical sciences, laws and, ultimately, the contours of a holistic orientation in all disciplines. By expanding philosophical inquiry into Earth jurisprudence we can develop responsible environmental ethics and deepen our understanding of how being in harmony with Nature brings true meaningfulness and fulfilment to our lives.

19. Earth jurisprudence implies wholeness, and a complex and deeply interdependent life-support network that rejects the logic that gives priority to the "part" as distinct from the whole, whether it is the individual versus the community or the State versus the world. An Earth-centred model can be imagined as a culture of partnership wherein the central values are equity, cooperation, dialogue, inclusion, comprehension, agreement, respect and co-inspiration, illustrating how Earth jurisprudence can reshape prevailing models.

20. The philosophy of Earth jurisprudence can be formulated under four main principles: subjectivity: the Universe is a holism, with values and rights; community: everything is related and coexists with everything else; lawfulness and order: there are organizing patterns in the Universe and in the Earth community that we can detect and understand; and wildness: the order and lawfulness in the Universe remains dynamic, mysterious and unpredictable.

21. Earth jurisprudence is in line with traditional indigenous conceptions of the world and shares features of many of the world's spiritual traditions, which interact with the Earth on the premise that humans are intimately and inextricably entwined with Nature. For indigenous peoples, philosophical and ethical concepts include plants, animals, water and air as beings with their own conscious experiences and agency. They believe that Nature should be recognized as having agency its own source of power, energy and identity.

B. Governance from an Earth jurisprudence approach

22. The main goal of Earth jurisprudence is to reconnect our thoughts and practices with Nature's processes, including reliance on a bottom-up approach to decision-making that is value-driven in ways that question prevailing ideologies associated with neoliberal globalization and new surges of nationalism. Earth jurisprudence is an approach that underscores the urgency of reconstructing civilization on ecological principles of sustainability and collaborative relationships with the natural world.

23. Incorporating the indigenous approach, including its concepts of Earth jurisprudence, into mainstream philosophy and ethics removes the artificial difference between humans and Nature, creating a world in which children are raised to believe that to love Nature is to love one's self, in which all people are compelled to consider the consequences of this entwined reality in their economic and political interactions.

24. Another means for helping to bridge the gap between humankind and Nature would be the fostering of ecocentric democracy in political decision-making at all levels. Ecocentric democracy can be defined as follows: "Groups and communities using decision-making systems that respect the principles of human democracy while explicitly extending valuation to include the intrinsic value of non-human Nature, with the ultimate goal of evaluating human wants equally to those of other species and living systems that make up the Ecosphere".[4]

25. Experts who addressed Earth jurisprudence from a theology and spirituality perspective called for a rethinking of the role of doctrines containing the notion of "dominion" and "stewardship" (over creation), and called for an alternative understanding of our role that places humans as "earthlings" in the Earth community. Increasingly, the call for spiritual and ethical insight is being taken up by many contemporary voices.

26. The experts highlighted that a newly found spiritual interaction with Nature is not just a means of "correcting" our relationship with the Earth, but also a way to enhance spirituality, and that to reach our full human potential we need this core connection.

27. In June 2015, this view was echoed in the encyclical letter of Pope Francis, "*Laudato Si*" ("Praise Be to You"), the first message in Vatican history to specifically address humanity's relationship with the environment. It also addresses many of the challenges highlighted by the experts who have participated, over the years, in the interactive dialogues of the General Assembly on Harmony with Nature, including: (a) the intrinsic value of Nature; (b) respect for the laws of

[4] http://www.harmonywithnatureun.org/wordpress/wp-content/uploads/Papers/Ecodemocracy.pdf.

Nature; (c) consumption and anthropocentrism; and (d) the role of indigenous peoples and cultures in our contemporary world. Specific references to those issues can be found throughout *Laudato Si*.

28. The major challenge of contemporary philosophy, ethics, theology and spirituality is to fashion an Earth-centred jurisprudence that can reshape the dominant model, advancing a collaborative relationship between human activity and its natural surroundings. To move in this direction is to move beyond the Anthropocene epoch,[5] leaving behind the logic of profitability as the raison d'être for economic activity.

29. Broad-scale adoption of an Earth-centred worldview, the only way in which the impending species extinction crisis can be averted, advances the concept of humankind and of our activities as integrated with all life on the planet. Earth jurisprudence offers a new path towards a worldview ensuring that we live in harmony with Nature.

III. Challenges and opportunities for applying Earth jurisprudence

30. In light of the unprecedented ecological challenges impacting every aspect of our existence, Earth jurisprudence requires an understanding of humanity's integral role within Earth's interdependent natural systems, including a shift in law, policy and economics. Its applicability has also had a positive effect on the way other disciplines are currently researched and studied.

31. In addition to the law and economics discipline, experts addressed the applicability of Earth jurisprudence in education; holistic science; the humanities; the arts, media, design and architecture; and philosophy and ethics.

32. In all of the above-mentioned disciplines, the prevailing anthropocentric paradigm has been highlighted as the obstacle to a holistic system of governance, although, gradually, Earth jurisprudence principles are being incorporated in a number of them. Earth jurisprudence is the thread that increasingly binds the disciplines together, mutually reinforcing them.

33. The subsections below provide a quick overview of some of the challenges and the applicability of Earth jurisprudence in the different disciplines.

A. Earth-centred Law

34. Earth-centred law and policy was represented by the largest group of experts, who considered how Earth jurisprudence may be implemented "to inspire citizens and societies to reconsider how they interact with the natural world in order to implement the Sustainable Development Goals in harmony with nature".[6]

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[5] This term is widely used to denote the present epoch, in which many geologically significant conditions and processes are being profoundly altered by human activity.

[6] In a number of cases, language enclosed in quotation marks is drawn from the submissions of different experts, but, in the interest of space, there is no specific attribution; individual inputs are available online at the Harmony with Nature website (www.harmonywithnatureun.org/wordpress/2016-dialogue/).

35. Experts from around the world made recommendations for Earth-centred law and policy to ensure a flourishing Earth, expanding on the current Sustainable Development Goal strategies. Earth-centred law looks beyond the Goals in order to achieve them, including those Goals not specifically tied to the environment.

36. The first step is to include the rights of Nature in our governance systems, not by advancing its interests within the capital system as resources to be exploited, but by recognizing the fundamental legal rights of ecosystems and species to exist, thrive and regenerate. Nature is regarded as the source of basic "Earth rights" and these rights cannot be validly circumscribed or abrogated by human jurisprudence. These rights are not in opposition to human rights: as part of Nature, our rights are derived from those same rights. The human right to life is meaningless if the ecosystems that sustain us do not have the legal right to exist.

37. The rights of each sentient being are limited by the rights of all other beings to the extent necessary for the maintenance of the integrity, balance and health of larger ecological communities. Legal systems must impose obligations on human beings to respect the roles and the rights of non-human members of the Earth community. For example, a legal system based on Earth jurisprudence would have courts or tribunals to arbitrate conflicts between humans, and between humans and other beings, on the basis of which particular outcome would best maintain the integrity, balance and health of the Earth community.

38. In 1972, Christopher D. Stone published a book entitled *Should Trees Have Standing? Toward Legal Rights for Natural Objects*, in which he pointed to the widening of society's "circle of concern" that had led to the recognition of the legal rights of women, children, native Americans and African Americans. Stone argued that increasing public concern for the protection of Nature should lead to the recognition of the rights of Nature, which would enable the initiation of legal suits on behalf of trees and other "natural objects", including damages to be recovered and applied for their benefit.

39. Subsequently, the American Earth scholar and cosmologist Thomas Berry argued that we need a jurisprudence that would provide for the legal rights of geological and biological as well as human components of the Earth community, and that a legal system set up exclusively for humans was not realistic. Berry also emphasized that the habitat of all species should be given legal status as sacred and inviolable.

40. In a 2002 article entitled "Nature's Rights", Chilean lawyer Godofredo Stutzin noted that the development of law had reached a crucial moment, and that the idea and the ideal of justice had to acquire a new universality comprising the entire biosphere, adding not only new objects, but also new subjects to the legal establishment. Stutzin argued that recognizing the rights of Nature would constitute an act of justice by which the law, advancing in its process of development, would confirm the distinctive values inherent in the natural world, leaving behind the indefensible anthropocentric vision of Earth according to which the planet and all that exists upon it are but the environment of humankind, with no value other than their usefulness to the human species.

41. Currently, under most national laws, all non-human entities are considered as property. While it is not necessary to end the idea of property, the notion that a deed to property conveys with it the right to destroy an ecosystem needs to be changed.

Decision-making should be based on a hierarchy of needs defined by the integrity of ecosystems and their ability to thrive. Policies based on this idea would require changes in how we regulate the use of natural resources, and how decisions are made.

42. This is distinct from current environmental laws, which are ineffective based on the conceptual underpinning: such laws, including an endangered species listing system that cannot keep pace with current extinction rates; after-the-fact litigation that relies on proving individual loss with no obligation to restore ecosystems as systems; and an inability to bring cases on behalf of the injured environment (as opposed to on behalf of humans beings alone). These laws work by breaking ecosystems into separate parts, which is inconsistent with the fact that they are entwined and interdependent.

43. What is being regulated at present is how much destruction can occur. By contrast, an Earth jurisprudence model asks: "What would a healthy system look like?". In asking this question, we must recognize indigenous traditional ecological knowledge. Despite a lack of reliable global data on the extent of the Earth's surface under ownership, management and use by indigenous peoples and local communities, some researchers estimate that indigenous and forest peoples hold legal entitlement to about one-eighth of the world's forests, and protect about 80 per cent of its biodiversity. They hold traditional knowledge built on centuries of living in harmony with the ecosystems they are a part of and have always protected, and they are experts that need to be regarded as leaders in how to care for a local ecosystem.

44. For example, New Zealand is currently making strides in enacting Earth-centred law and policy after recognizing the spiritual and holistic "personhood" of the Whanganui River and Te Urewera (which now have no "owners") as part of the State's ongoing settlement process with the Maori peoples. The Maori people consider that the river and forest are their ancestors, and that they have the responsibility and the privilege to care for them as family members.[7]

45. Inclusion and recognition of the rights of Nature in international, regional, local and national law is vital, including in municipal ordinances (for example in the United States of America),[8] constitutions (for example in Ecuador) and national laws (for example in the Plurinational State of Bolivia), including the civil society call for the international adoption of a universal declaration of the rights of Mother Earth. In this regard, it should be noted that Ecuador amended its constitution in 2008 to recognize the rights of Nature in light of the perceived need to better protect Nature, or *Pachamama*, a term that embodies not only the physical aspects of the natural world but also its spiritual aspects, which require deeper respect than they have been given in law.

46. Article 71 of the constitution of Ecuador states that Nature, or *Pachamama*, where life is reproduced and exists, has the right to exist, persist, maintain itself and regenerate its own vital cycles, structure, functions and its evolutionary processes, and that any person, people, community or nationality may demand the observance of the rights of the natural environment before public bodies. Article 72 of the constitution

[7] For more detailed information on the different ways that New Zealand has recognized Maori cosmology in law, see Catherine J. Iorns Magallanes, "Maori Cultural Rights in Aotearoa New Zealand: Protecting the Cosmology that Protects the Environment" *Widener Law Review*, vol. 21, No. 2 (http://ssrn.com/abstract=2677396).

[8] See, "Ordinance of the City Council of the City of Santa Monica Establishing Sustainability Rights" (9 April 2013), Santa Monica Municipal Code.

addresses restitution, stating that nature has the right to be completely restored. The Government of Ecuador has taken a number of judicial and administrative actions to implement the constitutional provisions relating to the rights of Nature.[9]

47. In another example, parallel to the structure of the Universal Declaration of Human Rights,[10] the "Universal Declaration of Rights of Mother Earth", adopted at the World People's Conference on Climate Change and the Rights of Mother Earth, held in 2011, recognizes, in its article 1 (4), the "inherent rights of Mother Earth" to the natural world's "life, liberty and security of person".[11] These include the rights of the Earth and of all beings to "life and to exist", to "integral health" and to "identity and integrity".[12] The Declaration added that those rights, like human rights, "arise from the same source as existence".[13]

48. A further international example arises from the International Union for the Conservation of Nature (IUCN), a non-governmental organization with thousands of expert partners offering scientific, legal and other expertise which holds official observer and consultative status at the United Nations. At its quadrennial meeting in 2012, IUCN adopted a resolution recommending that it incorporate consideration of the "Rights of Nature" at "all levels and in all areas of intervention", create a "strategy for dissemination, communication and advocacy concerning the Rights of Nature" and begin the development of and promote a "Universal Declaration of the Rights of Nature" as a "first step towards reconciliation between human beings and the Earth as the basis of our lives, as well as the foundations of a new civilizing pact".[14] More recently, the IUCN World Commission on Environmental Law proposed formal adoption of a draft World Declaration on the Environmental Rule of Law, which provides that "All life has the inherent right to exist".[15]

49. Court systems also need to evolve. At a minimum, we must establish special tribunals to defend the rights of Nature from an Earth-centred perspective in local, national, regional and international justice systems. This will necessitate the education of judges and public prosecutors, and a change in the legal system to reflect a new, Earth-centred practice, including by strengthening case law and the setting of new precedents. Recent research shows that judicial momentum happens most effectively "below the radar", through the advancement of local cases rather than through highly politicized ones.

50. With respect to the courts, the establishment of the International Rights of Nature Tribunal by the signature of a "people's convention", held in Paris in December 2015 on the margins of the talks on climate change, is particularly significant. The Tribunal illustrates how experts from different disciplines could apply the Universal Declaration of the Rights of Mother Earth and international

[9] Craig M. Kauffman and Pamela L. Martin, "Testing Ecuador's Rights of Nature: Why Some Lawsuits Succeed and Others Fail", paper presented at the annual convention of the International Studies Association (Atlanta, Georgia, 18 March 2016).

[10] Resolution 217 A (III).

[11] See resolution 217 III (1948), article 3.

[12] https://pwccc.wordpress.com/programa/.

[13] IUCN and World Commission on Environmental Law, World Environmental Law Congress, Rio de Janeiro, Brazil, April 2016.

[14] See World Conservation Congress "Incorporation of the Rights of Nature as the organizational focal point in IUCN's decision-making" (IUCN, WCC-2012-Res-100, September 2012).

[15] IUCN and the World Commission on Environmental Law, World Environmental Law Congress (Rio de Janeiro, Brazil, April 2016).

human rights law in specific circumstances. It has generated and will generate judgments for the development of a body of Earth jurisprudence in practice and map out a way forward (see http://therightsofnature.org/rights-of-nature-tribunal).

51. While the recognition of the rights of Nature in law is necessary it is not sufficient. The power and claimed "rights" of corporate actors to influence legislation must shift dramatically in the face of a new Earth jurisprudence. Special attention needs to be paid to ensure that the "rights" of corporations are either eliminated or placed under the prioritized rights of the natural world to exist, thrive and evolve. This is particularly necessary in order to achieve the Sustainable Development Goals, as most are impacted negatively by the rapidly expanding assertion of corporate rights and the associated accumulation of wealth and political power in the hands of a few, at the expense of the many.

52. Recognizing the existence of the rights of Nature prioritizes the dignity of the human being and the dignity of the Earth over corporate personhood.

B. Ecological economics[16]

53. The major problem observed today is the view of Nature and the planet Earth as a "resource" to be used by the market economy. Attention to concerns about Nature and Earth-centred law is often viewed as creating barriers for economic growth. However, blind adherence to economic growth as a measure of well-being has resulted in increasing harm to the planet and to all of us.

54. The rational imperative of *homo economicus* towards profit maximization, market control, consumption and accumulation of material goods gives rise to a myopic goal of short-term gain for the few. This results in priority expenditures on war and armaments, and support for dysfunctional financial institutions and conspicuous consumption instead of the provision of education, health, sanitation, drinking water and social services for the poor. The prevailing belief that economics is value-free and economic problems are systemic and can be cured by Government action only adds to the lack of will to make meaningful changes for the betterment of all people and the Earth.

55. The challenge is to develop a deeper and more profound understanding of what it means for human beings to be an integral part of the natural world, and to put this understanding at the heart of economic theory and practice.

56. The imperative based on individualism, materialism and freedom from values produces tendencies and systems that are entrenched in modern economic practice, including an almost universal acceptance of private ownership of land and the environment, including patenting of nature and natural systems, without obligation to any wider Earth community, including humankind. There is an almost universal failure to equate the concept of land ownership with ownership of Nature or to identify the real beneficiaries of private ownership, let alone the moral implications of private ownership of Nature.

57. Economics should properly be considered as a holistic science in search of laws governing the relations between people, the planet, the cosmos, human society and the Earth community.

[16] See A/68/325.

58. Recent efforts to use the existing neoliberal economic system to "correct" the ills generated by unlimited economic and population growth will fail because they do not recognize humans as part of Nature. But we must be aware that not all alternatives to the current dominant paradigm are true allies. The "Green economy" is a dramatic example of this, in its focus on commodifying nature to "save" it. Anthropocentric and technocratic paradigms also ignore the fact that growth in the "free" market system, combined with greed to accumulate instead of circulating wealth, leads to monopoly and the extinction of true democracy.

59. For example, the "polluter pays principle" runs against the tenets of Earth jurisprudence as its focus is about how much to pay in exchange for damaging the environment, rather than about restoring the integrity and the health of Mother Earth. In this regard, money alone will never suffice. We must consider prohibition or the swift phasing-out of environmentally destructive practices like fossil fuel use. Other suggestions include a legal requirement for companies to demonstrate that they benefit the environment and an overhaul of the tax system to reward good environmental practices and penalize poor ones.

60. Our economic system must consider the "wellness" of the Earth, independent of how that wellness contributes to the immediate welfare of humankind. An Earth jurisprudence perspective recognizes the health or "wellness" and interconnectedness of the Earth and its ecosystems as normative values that will give rise to moral human standards by which economic practices and solutions will be guided. As such, Earth jurisprudence does not offer an alternative economic approach, it is more ambitious.

61. Experts commented that it is simply and profoundly wrong to continue to teach economics as if the economy is not connected to Earth's life support systems; finance as if it is simply lubricant for exchange; and law as if humans are the rightful owners of Earth and all its life.

62. Experts further considered a complete revision of our monetary and financial systems. Money is currently created as interest-bearing debt that obeys the laws of exponential growth. Most money is loaned for the purchase of existing assets, which drives up prices in a positive feedback loop, enriching owners but creating no new wealth. Price bubbles inevitably burst, leading to massive defaults on debt and economic crises with terrible impacts on the poor.

63. Furthermore, there should be a legally enforceable duty of care for the Earth applicable to all parties claiming exclusive possession of any piece of land, including the environment and the ecosystems it encompasses, based on the principle that it should be left in as good or better condition than that in which it was found.

64. Experts also suggested the establishment of an international institute of economists founded on an "Economists oath" similar to the Hippocratic oath, obliging them to act and advise at all times in the best interests of the Earth community, regardless of who is paying them or for what purpose.

C. Education

65. Experts stated that education needs to move away from "the use of money as a measuring stick", and as well as from reliance on economic "development" as a policy criterion. The requisite ecocentric philosophy aligns with the deep

sustainability of co-evolving environments, where, biodiversity and "Earth justice" take priority over competitiveness and individual profit. In order to move towards a "regenerative economy" and "permaculture ethics", education will also need to transcend separate disciplines.

66. To better understand the intricately connected web of life and to ensure respect and acknowledgement that human beings are one part of the Gaia Earth system requires education, and advocacy. Extensive education and training should be integrated into basic school and higher educational systems in order to facilitate a deep experiential connection with Nature from childhood.

67. Education and training must foster our appreciation of other species as living beings with an important role to play in a radically interconnected web of life and teach that our lives are interdependent with theirs. We need an openness and humility to learn from cultures that still have a deep connection with nature and to implement knowledge from ancient wisdom around the world that fosters more heart-based approaches to life.

68. Learning "needs to happen through life", and to involve both collaborative projects and frequent experiences out of doors. This reflects the views of several influential environmental thinkers, including Jack Mezirow (the founder of the concept of "transformative learning"), Thomas Berry and Rachel Carson, all of whom explored the concept of "ecopedagogy".

69. Experts strongly advocated interdisciplinary education and education in the field. In addition to the experiential and developmental philosophy of John Dewey and of the Waldorf and Steiner curricula that underlie many current initiatives, a number of current and highly promising approaches were mentioned, many of which include a spiritual emphasis that complements a current and narrowly economic definition of personal and social well-being.

70. In Benin, for example, the non-governmental organization Groupe de Recherche et d'Action pour le Bien-Etre au Benin (GRABE-Benin) was established as a learning centre for ecologically sustainable agriculture, along with numerous "Nature and culture clubs" and intergenerational learning centres for youth and elders. In Sweden, there is a governmentally sponsored "Action Plan for Learning and Education for Sustainability", whose goal is "transformative change" aimed at achieving the 17 Sustainable Development Goals. Both Sweden's "Nature schools" and the approach of the Plurinational State of Bolivia to outdoor learning and agriculture under "Buen Vivir" both aim to complement traditional disciplines with an emphasis on wholeness, connection and balance.

71. School gardens can be especially valuable in exposing students to models of "small-scale food production". Experts expressed their appreciation for the Transition Movement (http://www.transitionus.org/about-us) and for Joanna Macy's initiative "Work that Reconnects".

72. Other exciting approaches include those adopted by the Regional Schools and College Permaculture Programme (ReSCOPE) in Africa, the Permatil initiative in Timor-Leste, the "Children in Permaculture" project in Europe, the Outdoor Classroom Project, the Camphill Movement for "curative education" and the Ruskin Mill Biodynamic Agriculture Training Programme in England, which works curatively with the manual arts.

73. From primary schools to Universities, there should be a general debate on Earth-centred law and jurisprudence[17] through the realization of dialogues at Universities, public hearings for the civil society and authorities and speeches aimed at children in public and private schools. It is crucial to empower all those working in academia and in civil society, and children in particular, with Earth jurisprudence principles so that they may act as agents for change.

D. Holistic science[18]

74. Experts agreed that the sciences remain dominated by reductionist methodologies — and a narrow disciplinary focus. In part this is because of their success in advancing technological innovations that society finds useful. Nonetheless, elements of more holistic approaches are rapidly advancing in the scientific community, including the now established field of study known as Earth system science.

75. The modern origins of Earth system science can be traced back to the seminal work of James Hutton and his treatise on a "Theory of the Earth", published in 1788, and Vladimir Ivanovich Verdansky's publication *The Biosphere*, published in 1924. An integrated systems perspective on Earth in toto was further advanced by Donella Meadows and colleagues in their 1972 publication, *The Limits to Growth*, and, in the same year, in James Lovelock's Gaia theory, outlining that the Earth functions like a self-regulating organism. Holistic science would continue in this tradition and would similarly encompass the interactions between the major subsystems (e.g. biosphere, geosphere, hydrosphere and atmosphere), the Earth's energy balance and biogeochemical cycles.

76. In addition to recognizing multiple connections and feedbacks between components and subsystems as in Earth system science, holistic science demands that every problem be given a top-down worldview context, recognizing the Earth as a complex system of connections, flows and processes that are in continual "conversation", with feedbacks at and between all scales of organization.

77. Holistic science would be adept at drawing upon knowledge from the humanities, including philosophy, focusing on relationships between subjects rather than studying isolated objectives devoid of meaning. Holistic science would also engage with the traditional ecological knowledge of indigenous peoples. Holistic science would address the numerous ways in which humans interact with the multiple social and ecological environments they inhabit and shape, including the connection between indigenous peoples and the preservation of biodiversity, acknowledging both that humans are part of the system being investigated and that other species are not objects, but living entities that deserve our moral consideration.

78. Useful analogies can be drawn between health sciences and holistic science. In the same way that health science has an explicit, normatively framed mission (to promote the health and well-being of people and populations), holistic science would have a normative mission to promote the health and well-being of the Earth

[17] For example, the study of Earth law at Vermont Law School and of Earth jurisprudence at Barry University School of Law.

[18] See A/69/322.

community. This would require the study of humans living together in peaceful coexistence with all of the Earth's residents.

79. Holistic science should articulate a mission that is idealistic, problem-oriented and Earth-centred, and scientists with a specialization in work across disciplinary boundaries should be valued. The benefits of a mission-oriented holistic science would be enormous, including the generation of knowledge and approaches that would enable the transition of human societies away from the current damaging relationship between humankind and the Earth to a restoration of balance and enhanced interdependence.

80. An example of the way that Earth system science is evolving into a more holistic, mission-oriented science is illustrated by the "Future Earth" research initiative, which aims at developing the knowledge base for effectively responding to the risks and opportunities of global environmental change and supporting transformation towards global sustainability in the coming decades, including the implementation of the Sustainable Development Goals. While this trend and such initiatives are welcomed, further advances are needed if holistic science consistent with and supportive of Earth jurisprudence is to be realized.

81. One of the contributions of holistic science could be to craft a new scientific narrative that helps engage people and communities with what it means to be human, where we have come from and where we might be going. Earth-centred holistic science can help develop a universal understanding, integrating the natural sciences, social sciences and the humanities while maintaining awareness of transdisciplinary methodologies linking the laws of thermodynamics, human intuition and ethical values. At the same time, Earth-centred holistic science would focus on solving real problems for which reductionist solutions are ineffective.

82. Current approaches to the Anthropocene epoch that focus on human impacts on the Earth's biogeochemistry need to be expanded. Concepts such as the Symbiocene,[19] an era when human action, culture and enterprise would nurture the mutual interdependence of the greater community and promote the health of all ecosystems, are more promising and solution-oriented.

83. Another concept that can help "join up the dots" is biophilia — our innate drive to connect with Nature. Methods grounded in the idea of biophilia, such as the connectedness to nature-scale and rewilding, support the movement toward holistic science.

84. Of particular promise are scientific efforts that combine traditional ecological knowledge of indigenous peoples (long-established models of holistic science) with traditional science in order to cogenerate knowledge. The very roots of holistic science can be traced back to ancient history and traditional wisdom.

85. Finally, the experts considered that we need to support holistic science that helps us define, measure and track our progress toward "healthy" ecosystems, ecosystem integrity and planetary sustainability. While these goals are articulated in international and national laws and declarations, including in the Sustainable Development Goals, the science underlying them focuses primarily on whether the systems are not completely degraded rather than actually flourishing, and generally

[19] http://www.harmonywithnatureun.org/wordpress/wp-content/uploads/DialogueInputs/GlennAlbrecht_H_Science.pdf

address only discrete elements of those systems (including water quality, topsoil levels and particular species counts), rather than the systems themselves. Holistic science that examines whether systems are thriving is essential to the successful implementation of Earth-centred governance.

E. The humanities

86. Experts in the humanities expressed concern that modern civilization is driven by industrial growth, which expands economies and technology but does not guarantee the preservation of biodiversity and healthy ecosystems but rather leads to their destruction.

87. As highlighted in other disciplines, the main obstacles in the humanities for the implementation of an Earth-centred worldview is the "development ideology", "the dominant academic ideology aligned with capitalist forces and the capitalist paradigm". This economic paradigm is in conflict with alternative knowledge and with traditional and indigenous cultures.

88. Participants in the virtual dialogue considered that the social sciences are currently divided into two main groups: the dominant, liberal and neoliberal paradigm, and the emancipatory paradigm that recognizes the inherent moral worth and rights of the Earth, as expressed in the Andean concept of Mother Earth, *Pachamama*. In addition, "the practice of humanities in a non-human-centred perspective would require a revolution in human thought, as the Copernican revolution did, owing, for the most part, to the prevailing assumption that human consciousness is the superior consciousness in Nature".

89. In the humanities there is usually an implication of essential distinction and dualism as inherent analytical notions accompanying anthropocentric capitalism, the source of myriad ecological crises.

90. The application of Earth jurisprudence in the humanities would therefore mean the adoption of a human project "as one particular instance of a universal project that embraced all living creatures and the whole of Nature". This approach would advance an interconnection and an interdependence between all traditional academic disciplines since Earth jurisprudence can broadly be described as a practical philosophy based on the understanding that Nature is a "communion of subjects" rather than a "collection of objects". In addition, "its practice should imply other symbolic forms, not only written words, but other ways to interact with Nature".

91. Four practical approaches should be considered: (a) supporting communication on Earth jurisprudence in the humanities through the media and other modes of communication; (b) promoting activities such as retreats in nature; (c) encouraging forums where academics and activists are not separated; and (d) the development of an Earth-centred vocabulary that better reflects our interconnections with Nature.

92. A more interdisciplinary and intercultural paradigm should come from those who are excluded from the capitalist system in order to bring about a "planetary emancipation". In this regard, there are concrete examples of coalitions between civil society and lawyers working to bring about an understanding of Earth jurisprudence.

93. One promising approach is that followed by the African Biodiversity Network, which supports traditional knowledge and seed revival as well as the efforts of indigenous communities in "progressively reviving the meanings and symbolism of totems, names of rivers, seeds, seasons, etc.".

94. A shift of academic studies of the humanities is needed. For example, some experts suggested that philosophy and epistemology should focus more on imagination and intuitive knowledge. Literature should be more inspired by ecopsychology and history, including the concept of the evolution of consciousness of all species. Experts also noted that the works of authors such as Thomas Berry and Albert Einstein, as well as of Tony Cunningham, a well-known South African ethnobotanist, should be studied more intensively.

F. Philosophy and ethics

95. The experts in the field of philosophy and ethics concurred that Western civilization has an anthropocentric philosophical tradition based on a moral hierarchy and/or moral dualism between beings, a doctrine that holds up the human "rational" mind as the foundation of values and rights and that justifies and defends human supremacy. This binary or dualistic concept has governed the relationship between man and Nature and has rarely sought to merge the words "Earth" and "jurisprudence".

96. In our competitive culture, we are guided by the "ethics of convenience" and a "cultural philosophy that condones domination", exhorting the values of competition, authority, power and, ultimately, war. Herein the needs of Nature are subordinated to private property rights and economic considerations so long as there are no legal or ethical constraints limiting those rights. The exploitation of natural resources is free from constraining ideas of interconnectedness with Nature.

97. The prevalence of such values has led, as a consequence, to the ravaging of the Earth. This prevailing anthropocentric "tunnel vision" of society — shared by popular public opinion and the scientific establishment, and even forming part of philosophical discussions — is the hardest obstacle to overcome. It is driven by at least three factors: (a) the restricted focus of educational systems; (b) government practices, at least in many of the more powerful countries; and (c) unrestricted advertising for non-essential goods, and materialism in general.

98. To promote an Earth-centred worldview, political leaders and people around the world have to think of strategies for promoting this position in their societies. People must question the current worldview, including the principles and mechanisms underlying anthropocentrism and its key elements. Along with this critical inquiry, people must actively imagine an alternative Earth-centred worldview, with its own principles, mechanisms, elements and methods. Critical thinking, methodological self-reflection and imagination must be brought together to inform a kind of philosophy that would effectively promote a revision of the current worldview.

G. The arts, media, design and architecture

99. Among the experts in the disciplines of the arts, media, design and architecture, there was a prevailing concern that the media, large design houses and other institutional elements have a virtual monopoly on output, which they maintain in order to popularize their own political bias — invariably one informed and driven by the dominant anthropocentric mindset. This relationship is fundamental in these disciplines as they constitute the primary means of asserting, reinforcing and mainstreaming this particular worldview.

100. In a number of instances the concept of sustainability has been misappropriated to support consumerism and anthropocentrism, for example by posing the question "how can we sustain our level of consumption?" rather than "how can we sustain the entire biosphere?". Sustainable design and architecture should challenge prevailing models rather than being used as a means of justifying or altering them in a token fashion.

101. At present, professional practices are not only anthropocentric, they are also North and Eurocentric, urban centric, white, male and heteronormative, and this concentration of accreditation, prestige and power is self-fulfilling: paradigms that might institute collaborative, Earth-centred design and media are denigrated and excluded. The cult of the individual is a key component of this worldview, and it has had a devastating effect in the world of the arts, media, design and architecture where the work of humankind is always considered to be superior to the work of nature, and the work of the individual is glorified, thus amplifying tendencies towards solipsism[20] and hedonism over communal or global well-being.

102. Experts asserted that these disciplines must move towards a collaborative paradigm rooted in and driven by collective practice, a model that is more reflective of the common good and imagination than isolated "genius". Furthermore, indigenous-led projects across all the disciplines would allow often deeply Earth-centric societies to set an example for the rest of humankind and also encourage a culture and practice of community-led arts, media, design and architecture.

103. It is vital that we re-establish connection with nature. Rather than focusing solely on human dramas and themes, projects should explore and celebrate the natural world and our role as part of it. While such a transition may be easier in the arts and architecture, which are rooted in celebration and ritual, change is also needed in the field of media and design, which are vital expressions of human culture and meaning.

104. As a part of the political-economic system, these disciplines have maintained aesthetic and commercial considerations as measure of success, but there will have to be a change. "Edu-tainment" must replace the current fare presented as entertainment in mass communication, and artists and producers must be aware of the needs of the community and the planet.

105. Experts advanced the inclusivity of an Earth-centred approach to these disciplines. While traditional media will continue to play a role, technological advancement can also be harnessed for social and planetary good: computer games, television, radio and the Internet (including social media and online news) often

[20] The view or theory that the self is all that can be known to exist.

have the ability not only to be collaborative, but also to be profoundly global, drawing humanity together and making us aware, as a species, of our role on the planet.

106. We can draw humanity closer to Nature through the use of the media on local as well as global levels. Examples of such practices are included the United Nations Educational, Scientific and Cultural Organization (UNESCO) Biosphere Soundscapes project, which explores the creative possibility of acoustic ecology, and exemplified in the work of Tim Collins and Reiko Goto, environmental artists whose "primary focus is on natural public places and the everyday experience of the environmental commons".

IV. Conclusion

107. We, experts on Earth jurisprudence and members of the Harmony with Nature Knowledge Network, take this opportunity to express our appreciation to the General Assembly for entrusting us, through the adoption of its resolution 70/208, to address Earth jurisprudence and to present a summary report to the Assembly.

108. The high-level of participation in this first virtual dialogue, which included over 120 experts from all continents, allowed us to interact and share, both in written form and orally, the most up-to-date information on Earth jurisprudence being gradually applied worldwide in the different disciplines.

109. In light of the volume of information contained on the website, the present summary report provides an overview on Earth jurisprudence. All written submissions of the experts are available as supplementary information at the Harmony with Nature website (www.harmonywithnatureun.org/wordpress/2016-dialogue/).

110. Given the fundamental interconnections between humanity and Nature, the urgent need to inspire citizens and societies to reconsider how they interact with the natural world and the importance of the implementation of the 2030 Agenda over the next 14 years, it is our view that Earth jurisprudence principles should be included and applied in the implementation of all 17 Sustainable Development Goals.

V. Recommendations

111. The experts of the Harmony with Nature Knowledge Network, composed of practitioners, thinkers and academicians who have participated in past interactive dialogues of the General Assembly and in this first virtual dialogue on Harmony with Nature addressing Earth jurisprudence, are committed to sharing their knowledge and expertise with all parties interested in advancing an Earth-centred worldview, reflecting the principles and values of Harmony with Nature and employing current scientific information.

112. The following recommendations are addressed to Member States, United Nations programmes, the specialized agencies and international and non-governmental organizations, including educational institutions, which, through the Harmony with Nature initiative, share a belief that the world community has an opportunity to

highlight the urgent need for coordinated action in the face of the widespread threats to the health of our natural world.

113. The experts of the Harmony with Nature Knowledge Network strongly encourage and recommend that all parties take action in the following areas, as appropriate to their expertise and authority:

A. Earth-centred law

- Convene the experts of the Harmony with Nature Knowledge Network to recommend metrics by which progress towards the top-level Sustainable Development Goals could be measured from an Earth-centred perspective. This process would be similar to the request for broader measures of progress outlined in paragraph 38 of "The future we want" (resolution 66/288).[21]
- Train and support lawyers to work for the rights of Nature.
- Collect regularly and broadly publicize living examples around the world of successful implementation of Nature's rights in law.
- Develop a new, integrated legal perspective and policy framework around rights of Nature and tie it to other struggles for justice, including describing how the recognition of Nature's rights (and rejection of governance systems that harm those rights) positively impacts the struggle, inter alia, for racial justice, climate justice and environmental justice, as well as to rectify growing wealth inequality.
- Adopt a United Nations resolution endorsing the importance of exploring the potential of Earth jurisprudence as a framework for developing international, national and local governance systems that will enable human communities to live in Harmony with Nature, and encouraging public and private sector institutions to make resources available for this purpose.
- Establish a fund under the auspices of the United Nations for ongoing research into the practical application of Earth jurisprudence to achieve the Sustainable Development Goals.
- Involve indigenous peoples' organizations (including the United Nations Permanent Forum on Indigenous Issues) in all United Nations initiatives concerning Earth jurisprudence to benefit from their deep understanding of how to exercise our responsibility towards ecological communities.
- Provide support for implementation of the IUCN resolution (WCC-2012-Res-100, September 2012) calling for the incorporation of the rights of Nature concepts into law and science.
- Give special emphasis and protection for sacred natural sites, including bans on extractive activities at such sites.

[21] "We recognize the need for broader measures of progress to complement gross domestic product in order to better inform policy decisions, and in this regard request the United Nations Statistical Commission, in consultation with relevant United Nations system entities and other organizations to launch a programme of work in this area, building on existing initiatives".

- Support entities working to pass and implement local laws recognizing the rights of Nature.
- Work to develop standards for implementation of the rights of Nature for all countries, for example, on the definition of the "health" of an ecosystem or species.
- Define life cycles, the structure of ecosystems and evolutionary processes.
- Develop regulations for the protection and restoration of Nature before, during and after environmental conflicts.
- Involve participants in the United Nations interactive dialogues on Harmony with Nature in the drawing up of annual action plans.
- Develop future interactive dialogues on Harmony with Nature to include the use of different languages (e.g. Spanish, Portuguese and Kichwa).
- Promote, conduct and disseminate studies and research in order to compare the similarities and differences between the Earth-centred worldview of the West and the East.
- Review the concept of customary law and the principles of analogy beyond Western culture (e.g. *Pachamama*). Ancient customary law can be a source for Earth-centred law.
- Promote the establishment of "Rights of Nature" tribunals around the world to adjudicate cases of violations of the rights of Nature in order to demonstrate how Earth jurisprudence can be applied effectively to address the key challenges of the twenty-first century, including climate change. These could be modelled on the tribunals held by members of the Global Alliance for the Rights of Nature, including the drafting and dissemination of the judgements of the tribunals and efforts to ensure implementation of recommendations.

B. Ecological economics

- Promote education and training at all levels in Earth-centred thought and understanding.
- Move ecology, critical thinking and connection with Nature to the centre of the teaching of economics, including a holistic view of what it is to be human and part of Nature.
- Recognize and teach economics as a normative subject, with implications for individual morals or ethics based on a long-term view of the welfare of Nature and of succeeding generations.
- Understand and value the connection between the spiritual and material aspects of human existence and integrate them to value the well-being of people and the planet equally, above material gain.
- Establish enforcement procedures and institutions for recognizing rights of Nature and the human duty of care for Nature, including a "Declaration of the Rights of Nature"; the establishment of an international environmental tribunal; and criminal sanctions for crimes against Nature, particularly directed at corporations and those who control them.

- Study and teach the implications of private ownership of land and Nature for all members of the Earth community. Establish an internationally recognized system of land registration, use it to enforce fundamental duties for all people who have exclusive use of the natural environment and collect publicly created rental value for public use, with particular emphasis on the protection of Nature and its rights.
- Stop the privatization of Nature by establishing an international system of patents and copyrights based on common asset trusts.
- Create new economic measures to include the well-being of Nature, including human beings, in measuring economic progress and success.
- Direct research to produce technologies that improve the lives of those who are economically disadvantaged while promoting a mutually enhancing relationship between people and Nature.
- Develop monetary and fiscal systems that treat both money or credit creation and access to Nature through exclusive ownership as a global commons to be utilized for the good of the whole Earth community.

C. Education

- Develop guidelines on education, to be determined by a permanent international body or forum mandated to guide members of the academic community and of civil society, and children in particular, towards greater awareness of the serious ongoing ecological crisis, of the fact that efforts made so far have not been able to revert it and that, therefore, Earth-centred law and Earth jurisprudence are important tools for change. This international body would also inspire a change in the institutions of the Member States.
- Promote initiatives, programmes and policies to transform education and to nurture a sense of affiliation with the larger community of life.
- Promote and support civil society training in the philosophy and practice of Earth jurisprudence, including ecoliteracy.
- Promote educational and cultural reform to overcome the growing threat of "Nature deficit disorder" by fostering connections between schools and Nature-based agriculture wilderness exploration, including indigenous peoples' worldviews.
- Urge individuals to be conscious of their responsibility and accountability to Nature.

D. Holistic science

- UNESCO to organize, in collaboration with the International Council for Science, an international symposium on the topic "Towards holistic science: — barriers and opportunities" in order to initiate a dialogue between the humanities and the sciences focused on holistic science. This symposium could draw on efforts under the "Future Earth" initiative to advance a more integrated approach to Earth system studies inclusive of the human dimension.

- The science, technology and innovation capacity-building mechanism envisioned for the least developed countries under Goal 17, target 8, of the 2030 Agenda should include holistic, Earth-centred science options and knowledge to provide for a genuine opportunity to achieve a sustainable future.
- Establishment of a worldwide database of initiatives to share promising methods and applications of holistic science.
- Holistic science measures should be part of a new measurement of progress as called for in Goal 17, target 9, of the 2030 Agenda.
- Promising models of Earth jurisprudence and the application of holistic science that are already established should be documented and evaluated, lessons learned shared and, where appropriate, replicated. This task could be coordinated between the United Nations Harmony with Nature framework. UNESCO and IUCN may also have an interest in being involved in this project.

E. Humanities

- Support the revival of indigenous knowledge and learning from their cultures, practices and governance systems.
- Recognize traditional cultures as relevant examples for healing the Earth and sustaining human livelihoods.
- Transform the academic disciplines to become Earth-centred.
- Increase the number of lessons about relationships between all aspects of life (holistic thinking).
- Support increased cultural production on a cooperative basis.
- Create alternative centres of learning psychology.
- Promote the training of Earth jurisprudence facilitators (using models provided by the Gaia Foundation "training for transformation" initiative and the growing African Earth jurisprudence network).
- Establish regional conferences and dialogues on Earth jurisprudence practices and strategies.
- Create opportunities to discuss Earth rights.

F. Philosophy and ethics

- Introduce the concept of Nature into mainstream environmental politics.
- Integrate the voices of indigenous ethicists and philosophers into mainstream environmental decision-making.
- Rethink the meaning of the terms "sustainability", "development", and "economic and social progress" so that necessary changes may be made in consumption and production patterns in congruence with the varying carrying capacities of Nature in diverse regions and localities.

- Integrate Earth jurisprudence into political/philosophical dialogues on how to recognize and rethink democracy, acknowledging that human rights depend on Nature's rights.
- Promote the studies of the philosophy and Earth ethics as essential core curriculum requirements for all fields of education, including law, the natural and social sciences and the arts.
- Promote the widening of humankind's understanding of its place in the Universe through openness to the philosophical enlightenment that inspires ecological models of behaviour and relevant public policies.
- Preservation of all remaining wildlands in which ecological and evolutionary processes are still unfolding without human disturbance as reference sites to underpin and inspire the ecological vision.

G. Theology and spirituality

- Create, foster and further interreligious dialogue, both as part of this paradigm change and in general (with the Southern African Faith Communities' Environment Institute serving as a good example). The dialogue should include the participation of world religious leaders, encouraging them to provide firm leadership and to focus on guiding their adherents and congregations towards greater love and respect for creation.
- Create awareness-raising material on the Harmony with Nature paradigm accessible for religious leaders, their congregations and wide sections of society.
- Create spaces and programmes for people to encounter spirituality in Nature.
- Support rights of Nature legislation, especially ensuring that it retains a deep and/or spiritual level and is not just another way of paying lip service to the concept of living in harmony with Nature.
- Promote academic transformation, conferences and learning spaces on non-anthropocentric theology.
- Theological education for all religions should involve debate on the subject of harmony with Nature, as well as material supportive of this paradigm, including practical ways of living that reflect this understanding.

H. The arts, media, design and architecture

- Encourage the media to promote wider understanding about, and communicate the importance of, Earth jurisprudence.
- Implement public policies to decentralize education of architecture and planning professionals beyond the cities, incorporating local customs.
- Include Earth jurisprudence approaches in undergraduate, postgraduate, research and scholarship programmes in the arts, media, design and architecture.

- Create a coalition and a strategy to build a support network of practitioners in the field.
- Provide funding for practitioners of Earth jurisprudence approaches and their projects.
- Create indigenous and other project case studies along with knowledge-sharing and dialogue.
- Promote an Earth-centred approach to design and construction projects, including wider use of renewable energy within projects, a focus on water use and the reduction of greenhouse gas consuming or greenhouse gas emitting materials.
- Apply the principles of the Earth Charter.
- Encourage education, local to each country, promoting Nature.
- Create a linguistics council to develop an Earth-centred vocabulary to replace the utilitarian vocabulary in use.
- Harness a framework of designers, producers, broadcasters and media network professionals to promote understanding about, and communicate the importance of, Earth jurisprudence.
- Fund research and publishing of Earth jurisprudence approaches, including projects led by indigenous communities.
- Educate policymakers and practitioners on an ongoing basis in this field.
- Create public information access systems.
- Help build new media and communications models as alternatives to the large multinational media monopolies.

Annex

Experts of the Knowledge Network on Harmony with Nature participating in the first virtual dialogue of the General Assembly on Harmony with Nature among experts on Earth jurisprudence worldwide

The following 127 experts took part in the first virtual dialogue on Harmony with Nature among experts on Earth jurisprudence worldwide and submitted papers under the following eight disciplines.[a] Those experts who also acted as facilitators are identified by footnotes.

Earth-centred law

Abate, Randall

Bagni, Silvia

Ballantyne-Brodie, Laura[b]

Berros, Maria Valeria

Biggs, Shannon[c]

Borras, Susana

Boyle, Simon

Cabanes, Valerie

Carducci, Michelle

Choi, Eunsoon

Cullinan, Cormac[d]

Damtie, Mellese

De Carvalho Dantas, Fernando

De Oliveira Moraes, Germana

Deen, Traci

Dene, Frederik David

Derani, Christiane

Greene, Natalia[e]

Hosken, Liz

Hasson, Vanessa

Islas, Jorge

[a] http://www.harmonywithnatureun org/knowledgenetwork/dialogue-inputs/.
[b] Facilitator, Asia, Australia and Oceania.
[c] Facilitator, North America.
[d] Facilitator, Africa.
[e] Facilitator, South America.

Ito, Mumta[f]

Kauffmann, Craig

Kok, Marjolein

Kim, Young Joon

Maloney, Michelle

Martinez, Esperanza

Mead, Lisa

Mitambo, Simon

Montini, Massimiliano

Negrini, Maria Carolina

Park, Taehyun

Pelizzon, Alessandro

Perez Villaroel, Joffre

Ragettli, Doris

Robertson, Colin

Ruz Buenfil, Alberto

Sayeg, Ricardo

Scarlin, Roger

Sheehan, Linda[g]

Shiva, Vandana

Sifkovik Vrbica, Senka

Tabios, Anna Leah

Wilton, Fiona

Yilma, Mersha

Ecological economics

Arruda, Marcos

Brown, Peter G.[h]

Diarra, Adama

Farley, Joshua

Felber, Christian

Girardi, Gherardo

[f] Facilitator, Europe.
[g] Global facilitator, Earth-centred Law.
[h] Facilitator.

Larrea, Carlos

Makewell, Raymond

Mandhyan, Kishore

Mason, Ian[b]

Mofid, Kamran

Stryker, Josiah Dirck

Szeghi, Steve

Willmann de Donlea, Eva

Education

Appolinaire, Ousso Lio

Egli, Thomas

Elder, John[b]

Geiger, Lincoln

Goldring, Andy

Hogber, Niklas

Theil, Pella

Holistic science

Albrecht, Glenn

Bekoff, Marc

Brindis, Claudia

Canney, Susan

Costa, Paola

Elbers, Joerg

Gingerich, Owen

Gomez, Mariana

Gundidza, Method

Lawrence, Mark

Mackey, Brendan[b]

Mayer, Stephan

McKibben, Jeanne W.

Mcdaid, Liziwe

Rosales, Jon[b]

Schmidt, Jeremy

Shingu, Hideo

Tivell, Anders

Viveros, Felipe

Yelemty, Fassil

The Humanities

Berry, Sheila

Cashford, Jules

Lambert, Joseph[h]

Malomalo, Bas'Ilele

Tabaro, Dennis

Philosophy/ethics

Baudot, Barbara[h]

Bell, Mike

Courtney, Charles

Crawhall, Nigel

Damery, Patricia

Dommen, Edward

Falk, Richard

Flipo, Fabrice

Gray, Joe

Guerra, Willis

Hallgren, Henrik

Mathews, Freya

McMillan, T.S.

Mendonça, Pedro

Smith, Oliver

Waters, Rachel

The arts, media, design and architecture

Bazbaz, Salomon

Biemann, Ursula

Bish, Joseph

Campero, Chloe

Cano, Gabriela

Feiter, Louisa

Lopez, Erika

Mertinez, Jean Paul[h]

Moassab, Andreia

Moore, Erin

Nelson, Ilka

Ribeiro dos Santos, Tatiane

Theology/spirituality

Dahl, Arthur Lyon

Davies, Geoff

Goyns, Glynis

Hosken, Liz[h]

Mogano, Lydia

Putz, Oliver

Raiser, Konrad

Sacta Campos, Veronica